

Open Research Online

The Open University's repository of research publications and other research outputs

To What Extent Are UK Companies Using Big Data to Inform Their Marketing Strategy?

Thesis

How to cite:

Brewis, Claire Catherine Read (2016). To What Extent Are UK Companies Using Big Data to Inform Their Marketing Strategy? MRes thesis The Open University.

For guidance on citations see [FAQs](#).

© 2015 The Author



<https://creativecommons.org/licenses/by-nc-nd/4.0/>

Version: Version of Record

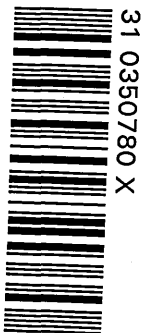
Link(s) to article on publisher's website:

<http://dx.doi.org/doi:10.21954/ou.ro.0000ef63>

Copyright and Moral Rights for the articles on this site are retained by the individual authors and/or other copyright owners. For more information on Open Research Online's data [policy](#) on reuse of materials please consult the policies page.

oro.open.ac.uk

**To what extent are UK companies using Big Data
to inform their Marketing Strategy?**



Claire Brewis MBA

Masters degree in Research

The Open University, Faculty of Business and Law

December 2015

DATE OF SUBMISSION : 1 DECEMBER 2015

DATE OF AWARD : 17 FEBRUARY 2016

ProQuest Number: 13834761

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent upon the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



ProQuest 13834761

Published by ProQuest LLC (2019). Copyright of the Dissertation is held by the Author.

All rights reserved.

This work is protected against unauthorized copying under Title 17, United States Code
Microform Edition © ProQuest LLC.

ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 – 1346

To what extent are UK companies using Big Data to inform their marketing strategy?

With the development of computing hardware and software and the emergence of the internet there has been an explosion in the amount of information available to businesses. This information has been described as 'Big Data' reflecting its large variety, volume and velocity. Companies can use selected elements of this data to improve their knowledge of their customers and develop appropriate marketing strategies to respond to them.

The study uses a social constructionist approach to develop a theory of how firms are applying Big Data to inform marketing strategy. It uses a qualitative approach to develop the theory. Semi structured interviews are used to gather insights from senior managers, with experience of their firms use of Big Data to inform marketing strategy.

The participants emphasised using data to inform operational marketing strategy, such as, product development and promotion rather than higher level marketing strategy. They described using more and different data to inform their strategy. However firms were not responding to the velocity of data nor concerned with its veracity. Only one participant firm used data that complied with the definition of 'Big Data'.

The challenges to firms in using Big Data were predominantly people-related. In particular firms benefited from engaged Executives to enable data-driven strategy. Progress in using data to inform marketing strategy was impeded by limited analytical capability. The skills and experience required to advance analytical capability were thought to be in short supply.

The study responds to a gap in academic literature on the role of Big Data in marketing strategy, using primary data from seven UK companies across a range of industry sectors. It identifies a limited uptake of Big Data to inform marketing strategy however it highlights that the participating companies recognise Big Data as relevant to developing marketing insights, creating segmentation approaches and informing the marketing mix. The research proposes that a future study could examine the ways in which Big Data influences the development of marketing strategy with a more extensive participant group. The research could identify the degree to which participants' application of Big Data varies according to their sophistication of understanding of it. This could enable firms to identify the potential for higher levels of understanding and application of Big Data in developing their marketing strategy.

Contents:

	Chapter title	Page
Chapter 1	Aims and objectives	9
1.1	Context	9
1.2	The Research Question and aims	10
<hr/>		
Chapter 2	Literature Review	13
2.1	Marketing and marketing strategy	13
2.1.1	Marketing strategy	14
2.1.2	Marketing strategy models	14
2.1.3	A cross functional discipline	15
2.2	The contribution of information technology to marketing strategy	16
2.3	Customer Relationship Management	17
2.4	Defining Big Data	18
2.5	Big Data Analysis	22
2.6	The significance of Big Data for Marketing Strategy	24
2.7	The challenges of using Big Data	25
Chapter 3	Methods of data collection	29
3.1	The theoretical approach	29
3.2	Interviews	31
3.2.1	Benefits and limitations of convenience sampling	32

3.3	Ethical considerations	33
3.4	Analysis	35
Chapter 4	Collecting and analysing data	37
4.1	Collecting the data	37
4.2	The data	39
4.2.1	Definitions of Big Data	40
4.2.2	Market research and segmentation	44
4.2.3	Product development	46
4.2.4	Promotion	47
4.2.5	In-house capability and contracting out services	51
4.2.6	Investment in Big Data	56
Chapter 5	Discussion	59
5.1	Understanding Big Data and its relevance to industry	59
5.1.1	Applying the 4Vs definition of Big Data	60
5.2	Big Data and marketing strategy	62
5.2.1	The influence of Porter's strategic typologies	63
5.2.2	Applying the marketing mix	63
5.2.3	Big Data analysis	65
5.3	The challenges of using Big Data	66
5.3.1	Technical investment	66
5.3.2	People related challenges	67

Chapter 6	Conclusions and limitations	69
6.1	Addressing the Research Question	69
6.2	Addressing the supporting questions	69
6.2.1	How do firms define Big data and perceive its usability and relevance to industry?	69
6.2.2	Which aspects of marketing strategy are informed by Big Data?	70
6.2.3	To what extent do organisations have the necessary skills, resources and capabilities to use Big data effectively?	70
6.3	The validity and limitations of the research	71
6.3.1	Validity	71
6.3.2	Limitations	71
6.4	The contribution of the research	72
6.5	Potential PhD Research	73
Chapter 7	Research review	75
7.1	Strengths in the research process	75
7.2	Hurdles in the research process	76
References		79

Appendices:

	Appendix title
A	Key informant interview structure
B	Information sheet for participants
C	Participant information
D	Sample of interview coding
E	Sample maps of topics of discussion from interview
F	Research schedule
G	Academic training inputs

Chapter 1 Aims and Objectives

1.1 Context

The introduction of personal and business computing practices in the 1970s brought with it the potential for factual and statistical information to be collected and stored in databases and subsequently in data warehouses. This data could be interrogated and businesses used this process to inform their strategy, for example, by segmenting their customer groups by location or needs and targeting products to suit particular customer groups. The development of the internet initially brought with it much more data from the World Wide Web (www) and web-sites and subsequently from social networking sites (Chen et al 2012). Unlike the previous data, these web-based data were amorphous and voluminous and the tools for analysis required specific questioning to produce useful information. The web-based data had increased volume, increased variety and increased velocity than previously, leading to its description as 'Big Data' (See Section 2.4 for a definition of these terms). Mobile devices such as tablets and mobile phones have further amplified the volume, variety and velocity of data. This provides firms with the potential for much more precise market information if they can access the data and have the capability and capacity to analyse it and direct their marketing strategy in response to the data.

McAfee and Brynjolfsson (2012) in their study of 330 American public companies with MIT and McKinsey, noted that those companies which characterised themselves as data-driven performed better against objective financial and operational measures than those which did not. Those in the top half of their industry were on average 5% more productive and 6% more profitable than their competitors. However, Leeflang et al (2013) noted that despite the explosion of relevant digital data, businesses were finding it

problematic to use because of its size, its volatility, and lack of structure and missing data.

This led the researcher to consider whether, despite the existence of Big Data, UK firms were actually using Big Data to inform their marketing strategy for business growth.

The Big Data phenomena is relatively new; Chen et al (2012) identify the use of the term Big Data as only occurring since 2006 with fewer than 100 academic publications referring to Big Data before 2012. The majority of Big Data referencing was in Information Technology (IT) publications and conference papers. Of the top 20 journal, only one marketing journal, The European Journal of Marketing, published on Big Data (Chen et al 2012). Many of the publications were literature-based so lacking primary sources and those with primary sources were often in practitioner journals, such as Harvard Business Review. These publications frequently had commercial partners such as McKinsey, IBM and Gartner (Leeflang et al (2014), McAfee & Brynjolfsson (2012), deSwaan Arons et al (2014). It is this gap in Big Data literature for academic studies from a strategic marketing perspective, using primary data from UK companies, which led the researcher to propose the current study.

1.2 The Research Question and aims

The research question to be addressed by the study is 'To what extent are UK companies using Big Data to inform their marketing strategy?'

The literature review provides context for the question by considering what Big Data is, how firms can make sense of it, how it can be used to inform marketing strategy and the challenges of using Big Data.

To answer the research question there are supporting questions which will be addressed through primary research:

- How do firms define Big Data and perceive its usability and relevance to industry?
- Which aspects of marketing strategy are informed by Big Data?
- To what extent do organisations have the necessary skills resources and capabilities to use Big Data effectively?

The broader research aims for the study are:

- To produce a research study which can act as a pilot or inform wider PhD research into whether UK companies are using Big Data to inform their marketing strategy

The Literature Review identifies a dearth of research on the application of Big Data in marketing, providing an opportunity for the researcher to undertake primary research with senior practitioners in order to generate qualitative insights as to the types of data they are using and how these are applied. The research is an exploratory study; the term 'extent' used in the Research Question refers to the degree to which firms are applying Big Data, ranging from low levels and low sophistication to wider, deeper use with greater sophistication.

Having defined the research questions and research aims, the literature review will investigate the role of marketing and marketing strategy and the contribution of information technology to marketing strategy. It will then discuss the scope of Big Data and the importance of analytics to transform the data to useful information. The literature review will then address the relationship between Big Data and marketing strategy. Finally, it will identify the technical and people-related challenges to using Big Data to inform marketing strategy.

Chapter 2 Literature Review

In their report for McKinsey, Manyika et al (2011, p.25) note that we 'are on the cusp of a tremendous wave of innovation, productivity and growth as well as new modes of completion and value capture – all driven by Big Data'. This research study is focused on the impact of this 'wave' on UK firms marketing strategy. The literature review provides a context for answering the research question 'To what extent are UK companies using Big Data to inform their marketing strategy?' by addressing the questions:

- What is marketing strategy?
- What is the contribution of information technology (IT) to marketing strategy?
- What is Big Data?
- How do firms make sense of Big Data?
- How can firms use Big Data to inform marketing strategy?
- What are the challenges of using Big Data?

2.1 Marketing and marketing strategy

The American Marketing Association (2003, cited in Brennan et al, 2003) define marketing as 'the process of planning and executing conception, pricing, promotion and distribution of ideas, goods and services to create exchanges that satisfy individual and organisational objectives'. Moorman & Rust (1999, p.180) note that the marketing function plays a key role in managing the important connections between the customer and critical firm elements including the firm's product, its service delivery and financial accountability. They suggest that the value of marketing depends on the extent to which the company develops knowledge and skills in making these connections.

2.1.1 Marketing strategy

Marketing strategy is the means by which a marketing goal is to be achieved, usually characterised by a specific target market and a marketing programme to reach it (Berkowitz et al (1997). Marketing research is used to inform a firm's marketing strategies by identifying how the firm will compete in its chosen businesses (Webster, 1992).

Marketing research involves specifying the information required, designing the methods for collecting information, implementing the data collection process, analysing the results and communicating the findings from the research (AMA 2004).

Within a company, marketing operates at three distinct levels: corporate, business and operational (Webster 1992). At a corporate level, marketing involves strategy formulation. At this level the marketing strategy involves defining the organisation's values, beliefs and culture; setting high level marketing aims and the organisation-wide support and resources required to achieve those aims. At a business level, the focus is on identifying how the firm is to compete in its chosen businesses through market segmentation, targeting and market positioning. At an operational level, the emphasis is on strategy implementation and the focus is on marketing tactics, such as applying the 'marketing mix' (Boyd and Walker, 1990).

2.1.2 Marketing Strategy models

In relation to marketing strategy there are two significant strategic concepts: Porter's strategic typologies (1980) and the Marketing Mix (Fan et al 2015).

a) Porter's strategic marketing typologies

Porter (1980) identified three successful generic marketing strategies: Differentiator, Cost Leadership and Focus. In a Differentiator strategy the firm concentrates on making itself

distinct from its competitors through business attributes such as service, quality, style, technology. A Cost Leadership strategy involves offering goods / services at a lower pricing than competitors with a view to selling a higher volume of items; it requires the firm to have low production and distribution costs. A Focus strategy involves concentrating on a narrow market segment and pursuing either Cost Leadership or Differentiation within that segment.

Valos et al's (2007) quantitative research found that, in relation to market research, the Differentiator strategy divided into two: Marketing Differentiator and Product Differentiator. They found Cost Leadership strategy to be relevant to market research but identified that Focus strategy did not have a significant role.

b) The Marketing Mix

The Marketing Mix is a widely used strategic tool for defining the operational aspects of marketing strategy. Goi's '5Ps' (2009) identify five critical areas for consideration in implementing marketing strategy: People, Place, Promotion, Product and Price.

2.1.3 A cross functional discipline

Delivering marketing strategy involves cross functional engagement. Kohli and Jaworski (1993, p.18) comment that 'market orientation involves the organisation-wide generation, dissemination and responsiveness to market intelligence... multiple departments sharing information about customers and engaging in activities designed to meet customer needs'. Moorman and Rust (1999) suggest that integrated approaches are necessary because most of the work in organisations cuts across different knowledge and skill domains, such as product development or supply chain management.

2.2 The contribution of information technology to marketing strategy

Webster (1992, p.15) notes that for market orientated firms 'Customer focus, market segmentation, targeting and positioning, assisted by information technology, will be the flexible bonds that hold the whole thing together' Sethi and Parvatiyar build on this (1995 p.409) commenting 'The impact of the technological revolution is changing the nature and activities of the marketing institutions'.

Brady, Saren & Tsoukas (2002 p.558) note that 'Current developments in information technologies are unfolding so fast in so unsettling and complex a manner, that it is very easy to see only thousands of different trees and get thoroughly lost in the wood'.

Whether because of this complexity or organisations' capabilities to respond to new developments Leverick et al (1997) comment that despite the promise that IT would radically transform marketing, the use of IT for marketing has been primarily routine and tactical.

Previously when firms used traditional sources, data were held by the marketing function, in the form of market research with a reliance on human interpretation and intuition (Moorthy et al 2014). With developments in information technologies including data storage, access and analysis capabilities, this approach shifted market research to the Information Technology (IT) function with its more technical approach to data analysis. Table 2 shows Sorofman and Frank's (2014) Intelligent Brand Framework which combines data-driven and human-centric approaches to inform marketing investment decision-making. Sorofman and Frank comment that what data-obsessed managers do not understand is the need to combine data-driven and human centric approaches for marketing investments.

Table 2. The Intelligent Brand Framework

Source: Sorofman and Frank (2014)

		CENTRICITY	
		DATA	HUMAN
LEVEL OF DECISION	STRATEGIC	OBSERVATION	INSPIRATION
MAKING	OPERATIONAL	AUTOMATION	ENGAGEMENT

The framework highlights that different levels of decision-making require different contributions from data and people.

2.3 Customer Relationship Management

The term ‘customer relationship management’ (CRM) has become central to marketing strategy because it unites the potential of relationship marketing strategies and IT to create profitable, long-term relationships with customers and other key stakeholders. CRM provides firms with enhanced opportunities to use data and information to understand customers and create value with them (Payne & Frow 2005 p.168).

a) CRM capability

Kumar and Reinartz (2006) describe CRM as sitting within a bundle of inter-related and inter-dependent organisational resources which are used to generate competitive advantage. Payne and Frow (2005) go on to say that CRM requires cross-functional integration of processes, people, operations and marketing capabilities, which are enabled through information technology and applications. These capabilities require IT infrastructure, human skills and experience to convert data to customer knowledge and business architecture aligning the organisation’s structure and strategy (Coltman, 2007).

b) Customer knowledge

From an information management perspective, customer identification is a critical beginning point for CRM (Park & Kim, 2003, p.653). Once a firm can identify its customers 'it can make its customer database more loyal by collecting, processing and applying customer profile and transaction data to create in-depth understanding of customer needs and provide fair value to all customers... When customers do not reveal their identity to the firm... they are invisible to the firm thus unmanageable'.

2.4 Defining Big Data

The term 'Big Data' emerged with the advent of computer technologies and particularly of data recording and storage technology; Chen et al (2012, Fig 2) note its steady and significantly increased use in publications since 2008. Laney (2011, p.75) describes Big Data as 'high volume, high velocity and or high variety information assets that require new forms of processing to enable enhanced decision making, insight discovery and process optimisation'. Laney's description is often referred to as the '3Vs' of volume, velocity and variety. Subsequent studies (IBM, 2013) have introduced a fourth V- 'veracity' relating to the certainty, accuracy and trustworthiness of data.

Boyd and Crawford 's (2012) perspective concentrates on Big Data's capability to search, aggregate and cross-reference large data sets relying on the interplay between three factors: technology, analysis and mythology. Firstly, they emphasise the technological requirements in terms of computer power and algorithms needed to gather, analyse, link and compare data. Secondly, they highlight analytical requirements to identify patterns in

data and to make claims for that data. The third of their triumvirate 'mythology' is the belief that Big Data offers a higher form of intelligence, knowledge and insights that were not previously possible, with the intimation that with these Data come greater objectivity and accuracy.

An alternative definition is provided by Kaisler et al (2013, p.995) who define Big Data as 'the amount of data just beyond technologies ability to store, manage and process efficiently'. This introduces the idea of a limit to the technological capacity of Big Data repositories, suggesting that Big Data may be more than can be managed by a firm.

Comparing the three definitions, it becomes clear that Big Data is defined by technologies, information supply and analytics. It should be noted that with the Big Data phenomena comes an entirely new vocabulary for concepts, definitions, and technical terms which are both new to Information Technology and also to the Marketing function.

The scope of Big Data can be outlined using the four 'Vs' headings: variety, volume and velocity and veracity.

2.4.1 Variety

Traditionally information for business marketing strategy took the form of market research through open, written sources such as books, journals or third party data collection such as TV and newspaper ratings points. Market research data was also gathered from direct interaction such as local knowledge, interviews, panels and focus groups, surveys and telemarketing. In addition, corporate data was presented through financial reporting of sales trends, profitability information, manufacturing data stored in-house and manually recorded, manipulated and presented. Sources were static, rather than dynamic and historical, rather than current.

More recently computing and web-based technologies have allowed data to be sourced dynamically and with greater immediacy. Table 1 presents a selection of Big Data sources relevant to business use, ranging from directly controlled Business to Business/Consumer (B2B/C) data, to web-based data sources and then environmental sources which are a function of data in the wider environment.

Table 1. A cross section of examples of Big Data sources

B2B or B2C data sources	Web-based data sources	Environmental data sources
<div>Emails</div> <div>SMS text messages</div> <div>Call centre logs</div> <div>Client chats</div>	<div>Web clickstream / Website links</div> <div>Online purchase information</div> <div>Social media e.g. Facebook,</div> <div>Twitter feeds</div> <div>Product reviews</div> <div>Blogs</div> <div>Pictures e.g. Instagram</div>	<div>CCTV</div> <div>Radio Frequency Identifiers</div> <div>Barcode scanners</div> <div>Geographic information systems (GIS)</div> <div>Satellite data</div> <div>The Internet of Things</div>
Source: Collated from Chen et al (2012), Moorthy et al (2014) and other sources		

Table 1 shows that in addition to their traditional sources, referred to earlier in this section, businesses now have a raft of other data sources to inform their marketing strategy.

2.4.2 Volume

As well as the range of Big Data sources the volumes of data they are creating has increased exponentially. Data is measured in bytes and Big Data is measured in petabytes (1 quadrillion bytes), extabytes (1 billion gigabytes) and even zettabytes (1 sextillion bytes). McAfee and Brynjolffson (2012) report, that in 2012, 2.2 extabytes of information were being created every day, while Walmart estimated that they were collecting 2.5 petabytes of data per hour from customer transactions which would fill 20 million filing cabinets of text (Boyd and Crawford 2012). These volumes give an indication of the scale of Big Data and raise the question as to how penetrable that amount of data is to potential users.

2.4.3 Velocity

Traditional data sources were stored in data repositories and reviewed historically, for example monthly sales trends. Big data, being processed using automated systems, can be tracked, updated and re-presented almost instantaneously in real time, if the organisation has the capability to turn the data into useful information at this speed. The potential of real time data is that a firm might use it to become more agile than their competitors, for example, by generating customer-specific promotional offers; it offers a potential source of competitive advantage.

With the explosion of data sources and the new vocabulary to name and describe them, there are also new computing technologies to generate store, analyse and communicate the data. Moorthy et al (2012) provide a useful summary. Commonly used examples include the Hadoop large-scale data-processing environment that is used by the 3 main commercial database suppliers, and NoSQL, which is commonly referred to as a cloud database system. The cloud can hold and distribute data, without 'cutting' it in any particular way. This enables users to ask whatever questions they want of it, without the constraints of previous structuring or analysis by others. These technology requirements have a capital investment impact on firms.

2.4.4 Veracity

'Veracity' refers to the reliability, accuracy and completeness of data. There is a myth, highlighted by Boyd and Crawford (2012) that Big Data offer higher forms of intelligence and knowledge and insights than were previously possible and that Big Data have an aura of truth, objectivity and accuracy. Certainly though, Big Data firms have an unprecedented breadth, depth and scale of knowledge of their customers, networks and communities. However, just as with traditional sources Big Data sources and outputs have

their limitations and working with them can be problematic; Facebook and Twitter have poor archiving and search facilities which limit the intelligence they can draw from their data. In addition, data collection regarding a single web community e.g. a single retailer or social network, is pre-segmented data as users of that source do not represent all segments of the population.

Although claims are made about the objectivity and truth of Big Data, Boyd and Crawford (2012) warn that this type of data is still subjective and has no closer claim on objective truth than traditional data. The availability of Big Data does not necessarily imply greater value to organisations; interpretation is at the core of data analysis (Boyd and Crawford 2012).

2.5 Big Data Analysis

Kudyba (2014) comments that there is no value to Big Data unless it helps decision-makers make better decisions, enhance strategic initiatives or communicate more effectively. To understand how data are converted to improved decision-making the next stage is to look at Big Data analysis and its application in marketing strategy.

The term 'Big Data' started to appear in publications after 2006, hand in hand with the term 'Business Analytics'. In 2010 there was an eight-fold increase in the use of 'Business Analytics' in academic journals as academics and industry sought to make sense of the arrival of the new data phenomena (Chen et al 2012). From a practitioner perspective, Bloomberg (2012) research identified that 97% of companies worth more than \$110m were using some form of business analytics (cited in Chen et al 2012).

Chen et al (2012) present the evolution of business intelligence and analysis (BIA) in three steps BIA 1.0-3.0 where BIA 1.0 reflects the business intelligence position pre-Big Data, in which structured data were stored using relational databases and data warehousing, with data being mined and statistically analysed and presented using dashboards and scorecards. In BIA 2.0, with the emergence of Big Data, intelligence becomes web-based and unstructured including social media and web analytics and opinion-mining. BIA 3.0 reflects the emergent mobile and sensor based technologies with location and person-centred analysis.

Big Data analytics can be divided into four types: text analytics, web analytics, network analytics and the fast emergent mobile analytics (Chen et al 2012). Text analytics techniques analyse data using natural language processing (NLP) and are used for text based searches including Question / Answer and opinion mining, Text analytics have been developed commercially, for example, in Apple's Siri technology. Web analytics has been the most active field in analytics research in the last decade in response to the maturity of web services; it focuses on data mining, statistical analysis and information retrieval used in social media analytics and search and mining facilities. Network analytics address data linkages, such as micro-links between individual web-pages viewed to products purchased or macro-links such as global network data on terrorism or disease contact networks. The final category mobile analytics, which is in its infancy, reflects the growth of the Mobile (M-) sector. Through mobile analytics firms can produce fine-grained, location-specific, context-aware, highly personalised content through 'smart devices' including phones and tablets.

In addition to these analytics, businesses which were operational before the Big Data phenomena have the legacy of traditional market research source, methods of analysis and ways of working. To provide more comprehensive business intelligence these need to

be blended into and work alongside those required by Big Data, requiring common terms of enquiry.

2.6 The significance of Big Data for marketing strategy

2.6.1 Data explosion

Big Data represent a huge explosion in information and potential business intelligence which offer firms an increasingly important source of competitive advantage in both Business-to-Business and Business-to-Consumer marketing (Leeflang et al. 2014). This change has affected marketing priorities and ways of operating. Leeflang et al's survey of almost 800 marketing executives identified that in the last two years the increased prevalence of digital media and tools in marketing was the factor most affecting their business. In addition to changing priorities, De Swaan Arons et al (2014) highlighted the shared principles of high performance marketing approaches. These principles included gaining insights to inform marketing strategy from integrated data on what customers are doing and why, enabling them to personalise a response and take into consideration the breadth of their customer relationships. This supported Hamlin's view that the role of market research is to support strategic decision making (2000, cited in Valos et al., 2007). Dahlstrom et al (2014) identify some reasons for that prevalence – digital has removed barriers across sectors and at the same time the transparency has shortened the shelf life of any competitive advantage. Their research amongst Chief Marketing Officers identified a commonality of purpose including discovering data-driven insights that drive growth: Dahlstrom et al (2014) cite McKinsey's Datamatics 2013 survey that shows that companies that use customer analytics contribute to improved organisational

performance by generating above-average profits, outperforming their peers across the customer lifecycle, enjoying superior customer loyalty and are more successful at new customer acquisition.

2.6.2 Big Data and the Marketing Mix

Fan et al. (2015) propose a framework to describe big data using the marketing mix as the marketing mix defines the principal components of marketing decisions. Their framework uses Goi's (2009) 5Ps of the marketing mix: People, Product, Promotion, Place and Price and cross-references them with Data, Method (of analysis) and Application. The inclusion of People in the marketing mix enables the perspectives of customers and competitors to be considered.

Fan et al.'s research identifies five applications of Big Data analytics through the lens of the Marketing Mix:

1. People - Customer segmentation & profiling
2. Product - Product ontology & reputation management
3. Promotion - Promotional marketing analysis and reporting systems
4. Price - Pricing strategy and competitor analysis
5. Place - Location based advertising and community dynamic analysis

2.7 The challenges of using Big Data

Leeflang et al. (2014) comment that although a great deal of attention has been focused on the opportunities presented by digital marketing, little attention has been given to the real challenges companies face in the digital arena.

2.7.1 Technical investment

Piccoli and Ives (2005) note that information is widely recognised as a fundamental firm resource and that organisations are investing significantly to improve their ability to collect, store, manage and distribute it. Their motivation to make this investment is that IT can be used to create competitive advantage through efficiency, improvements, differentiation and channel domination (Sethi and King, 1994).

McAfee and Brynjolfsson's (2012) study of public North American companies tests the hypothesis that data driven companies perform better. Their sample are high performing and resource rich firms who, although they are predominantly traditional rather than IT-initiated firms such as Amazon, have the wherewithal to invest in technology and analytical tools to inform their business strategy. That is not to say that their findings are representative of firms with fewer resources.

The reducing costs of analytical tools (McAfee and Brynjolfsson 2012) and the increased availability of commodity hardware, frameworks such as Hadoop and free-to-use analytical software and tools (Chen et al 2012) will reduce the technological barriers to entry for firms with fewer resources. Having these technologies in place gives firms technical access to data but still requires them to source and buy appropriate data from myriad sources (Table 1). Manovich (2011) notes that 'only social media companies have access to real large society data, importantly transactional data' because they own the data.

2.7.2 People-related challenges to using Big Data

In addition to technology, McAfee and Brynjolfsson (2012) identify four other challenges for firms to be able to take advantage of Big Data; all four are people-related and reflect that Big Data do not substitute for vision and insight. They note that firms must be led

with clear goals and with a company culture of 'what do we know' rather than 'what do we think'; that decision-making will be optimised when there is cross functional co-operation, for example between IT as data holders and marketing as data applicants. Finally, they note the importance of talent management.

a) Goals

McAfee and Brynjolfsson (2012) in their study of 330 American public companies with MIT and McKinsey, noted that those companies which characterised themselves as data-driven were on average 5% more productive and 6% more profitable performance than their competitors. If Big Data offer more factual information about their business and can potentially improve their business decision-making and performance based on evidence rather than intuition, there is commercial and economic prerogative to use it.

b) Culture/ Cross functional co-operation

While marketers have experience of business intelligence from traditional methods they are not necessarily familiar with the more complex analytics and metrics associated with Big Data and with aggregating data from multiple sources. This produces a potential tension with the IT function as although data mining enables companies to test their hypothesis the hypothesis needs to be framed. Snijders et al (2012) identify that cross functional co-operation presents an opportunity for firms if they combine the large, sparse Big Data delivered via IT with rich analysed data from the marketing function, bringing together a more comprehensive picture of a situation.

De Swaan et al (2014) suggest that to respond to Big Data firms must be organised for agility; complex, matrixed organisations should give way to networked organisations that are characterised by flexible roles and fluid responsibilities which are combined for short-term marketing initiatives. They present the 'Orchestrator model' which identifies the

changing construction of marketing teams in the light of changes to digital and social media. This model suggests that an 'orchestrator' draws on internal and external talent and puts together responsive teams with the capabilities to focus on data and analytics, customer engagement and content and production.

c) Talent management

With Big Data comes the need to analyse it. Increasingly firms are looking for data scientists capable of working with large quantities of data, cleaning and organising data sets and using visualising tools and technologies (Davenport and Patil, 2012). Moldovenau (2013 cited by Moorthy 2015 p.75) observes that there is an individual and a corporate element and that there is a challenge for organisations to effectively and efficiently transform relevant data into useful information; a business may have the access to Big Data but not the capability to analyse it appropriately or gain relevant insights. This capability requires talented individuals with greater numerical and analytical skills than traditional market research. Manyika (2011) comments that by 2018 440,000-480,000 trained people will be required to analyse data; 50% of the gap being statisticians and mathematicians. This role is referred to as 'data scientist' (Davenport and Patil 2012).

The literature review has identified the purpose of marketing strategy and the potential contribution of Big Data to inform this strategy. The study will now investigate UK firms' experiences of using Big Data to inform their marketing strategy.

Chapter 3 Methods of data collection

3.1 The theoretical approach

The research uses a social constructionist approach to develop a theory of how firms are practically applying Big Data to inform their marketing strategy. The research is theoretically positioned in marketing strategy although because of the limited research in marketing journals, on this relatively new phenomena, it also draws on information systems and business practitioner literature.

The social constructionist approach is taken on the basis that the view of reality is socially constructed and given meaning by individuals and made sense of via shared experience communicated through the medium of language. In line with Easterby-Smith's (2008) guidance the methodological implications of this approach, are firstly, that the development of a construct that draws on conversation and the reflexivity of participants to increase general understanding of the situation and secondly, the gathering of rich data, based on knowledge and experience. The research takes an interpretivist theoretical perspective. The researcher chose to take a phenomenological approach (Starks and Trinidad 2007) to capture the common features of the Big Data phenomena and as the basis for generating a thematic description of its application for marketing strategy within a number of firms, based on evidence from participant managers at each firm. A grounded theory approach was discounted because, although it allowed for discovery of theory by examining concepts in the data with a view to providing an explanatory theory, it best addressed research questions where the phenomena was experienced in different context by the same participant (Starks and Trinidad, 2007) and where multiple sources of data were under consideration.

The choice of the phenomenological method (Goulding, 1998) ensures that the words of the informant remain the primary source of data. This approach impacts on data gathering by giving the participants' experiences primacy over the researcher's viewpoint. The categories, themes and dialogue are emic, that is, determined by the participants. This approach (Morse 1994) engages the researcher at the data gathering stage encouraging reflection on their own experiences. It also enables a dialogue with those with experience of the phenomena to capture descriptions and identify phrases to impart an understanding of the experience. At the data analysis stage, the phenomenological method requires that the data are synthesised thematically to identify common structures of the experience, which are then linked to theory based on extant literature. Although Goulding (1998) argues that this reliance on theory influences the research process by restricting it to an existing body of work, an alternative perspective is that the literature provides a lens through which to view the participants' experiences.

As the research design involves theory building, the researcher sought a 'bottom-up' research method (Byers 1991). Interviewing was deemed to provide an opportunity to generate rich data from relevant, selected individuals regarding the application of Big Data in their firm. Alternative approaches such as focus groups were considered but ruled out because the researcher considered that more detailed information could be gathered from one-to-one interaction. Furthermore, discussion with more experienced academics identified a resistance amongst senior managers to attend research focus groups where potentially commercially sensitive information might be discussed.

The research used a comparative design (Bryman and Bell 2003) where the structure of the interviews used themes identified in the literature review. This approach allowed broad comparison of experience between the participant firms against a number of

themes. Yin (2014) comments that by comparing two or more cases a researcher is in a better position to establish the circumstances in which a theory will or will not hold.

3.2 Interviews

The research comprised seven interviews with senior executives working in the Information Technology and Marketing functions. The research participants all hold senior management positions providing them with insight into both the strategic and operational application of Big Data in their organisations' marketing strategies. The firms were all based in the UK and originated as 'bricks and mortar' based businesses rather than digitally-initiated businesses. McAfee and Brynjolfsson (2012 p.62) take the view that the potential for companies to gain competitive advantage from Big Data may be greater for companies other than those born digital.

The participants were identified through convenience sampling based on the researcher's previous employment in industry. The managers represented different sectors including retail, financial services, not-for-profit, FMCG, manufacturing and education with no more than one company per sector involved. The sectoral approach allowed the researcher to identify commonalities and divergence in the participants' experience of utilising Big Data to inform the marketing strategy.

The interviews were semi-structured and based on themes which emerged from the literature review. Details of the structure are provided in Appendix A Key Informant Interview Structure. The interviews were digitally recorded by the researcher, then transcribed and analysed using NVivo software. The interviews were held in a location and at a time convenient to the participants. The preference was to hold the interviews at

the interviewees' workplace allowing them to have additional data to hand and to be in a business mode, although at a time where it did not interfere with their work, at the end of a working day or at lunchtime. The secondary choice was a 1:1 meeting in a social setting outside work in a quiet environment such as the Open University Business School, or the interviewer's home office to minimise distractions but provide an environment conducive to information sharing and recording. As the participants were all known to the interviewer issues of personal safety were not a concern regarding timing or location of interviews.

Although Bryman and Bell (2003) emphasise the evaluation criteria of reliability, validity and replication for business research these have a strongly quantitative perspective. Lincoln and Guba (1985 cited by Bryman and Bell) propose that qualitative research is evaluated against credibility, transferability, dependability and confirmability. The researcher designed the research to gather evidence through practitioner examples to support the credibility of the research. It also enabled analysis of the research findings of this pilot research to assess the potential for a broader more generalisable study. In addition, using semi-structured interviews based on themes devised from the literature review (see Key Informant Interview Structure - Appendix A), the same broad topics were addressed with each interview participant, strengthening the dependability and confirmability of the research process. In addition the interviews predominantly took place in business environments to address ecological validity of the study.

3.2.1 Benefits and limitations of convenience sampling

The researcher used a convenience sampling approach to identify potential interviewees.

This approach was taken primarily because of the limited timescale to undertake the primary research.

The benefits of this approach were four-fold. Firstly, using the researcher's contacts enabled senior managers working in relevant posts to be contacted directly and promptly. Secondly, the participants showed their trust in the interviewer by discussing commercially sensitive issues relating to their own companies and competitors, and issues that might have been seen to reflect their managerial competence. The interviewees were also prepared to sign consent forms without querying ethical and confidentiality issues, as might have been the case with an unfamiliar researcher. Finally, the flow of the conversation was relaxed and informal because both parties knew each other, providing the researcher with rich information on Big Data that went beyond the scope of the research questions.

The convenience sampling approach had a number of limitations. The majority of participants were from Information Technology rather than Marketing functions, with the result that some of their comments reflect their expertise on Big Data from a technical perspective rather than in relation to marketing strategy. All of the participants were from firms originating in 'bricks and mortar', with no digitally born firms represented. Inclusion of the latter might have provided a different perspective to the research.

Overall the researcher felt that the benefits of the convenience sampling approach outweighed the limitations.

3.3 Ethical considerations

The researcher complied with the provisions of the Data Protection and Freedom of Information Acts, the Open University's Code of Practice for Research and Those

Conducting Research, the Ethics Principles for Research involving Human Participants and the Economic and Social Research Council's Framework for Research Ethics regarding confidentiality and data protection.

3.3.1 Consent and data protection

The purpose of the research was explained to all participants before the interview and their consent obtained for the use of information provided in the interview. Written consent was obtained using an information and consent form (Appendix B). In one instance the interviewee agreed to participate but requested anonymity because the nature of his organisation and his position within it meant that his input was politically and commercially sensitive. Rather than a transcribed interview the researcher carried out a telephone interview and made notes of the discussion.

3.3.2 Risk of harm to participants

The names of participating organisations and the names of participants are confidential and will be protected unless consent is given for disclosure. Participants were advised that their information would only be disclosed in the Dissertation and any publications or presentations arising directly from it, to OU staff or their agents for the purpose of supervision, examination or advice, or if required by law. The researcher has taken reasonable precautions to prevent unauthorised disclosure of data. Electronic copies of data have been entered into a filing system or database, password-protected and stored securely at the Open University computer and encrypted USB flash drivers. The data will be stored for no more than ten years and will only be accessible to the researcher; after that period it will be securely destroyed. Non-electronic data and unsecured interview recordings have been locked away, accessible to the researcher only.

The primary research participants were adult managers and senior employees. Although the interviews were not of an overtly sensitive nature, participants were asked about initiatives which may be a factor in the competitive advantage of their firm and potentially risk the well-being of their firm or their own employment. To minimise participant concerns about sharing commercially sensitive information with competitors through the research process each interviewee firm represented a single industrial sector.

The researcher anonymised the interviews at the transcription stage, converting the firm and the participant names to a code or pseudonym (e.g. FinanceCo), recognisable only to the researcher and their supervisor. If the interview referred to competitors the same process was applied (e.g. FinanceCo2). Where a participant is quoted verbatim, the permission of the participants was received before the interview commenced. To maintain confidentiality the interviews were coded so that the identity of participants was separate from the data. Within the study comparisons of the participant responses referred to the firm only industry sector. As all of the participants represented different industry sectors the risk of sharing commercially sensitive information in the report dissemination was minimal.

3.4 Analysis

The researcher used thematic analysis, where the unit of analysis for the study is the firm. The process draws from Braun and Clarke' work (2006), commencing with familiarisation with the interview data by reading and re-reading the transcriptions and noting down initial ideas. The researcher then used NVivo software, coding the interesting features of the data systematically across the data set and collating data relevant to each code. The codes were collated into potential themes and the themes checked to see how they fitted with the coded extracts and a thematic map has been developed. Ongoing analysis

refined the specifics of the themes and clarifies the 'story' of how the firms are using Big Data to inform their marketing strategy. The final analysis is supported by rich, descriptive evidence from the interviews.

Having defined the Research Question 'To what extent are UK companies using Big Data to inform their marketing strategy?', the researcher drafted a literature review to better understand Big Data. The literature review highlighted the potential applications and the challenges of using Big Data to inform marketing strategy. From these the researcher identified an appropriate research method through which to carry out primary research. The Key Informant Interview Structure brought together the methodology with themes and areas of interest raised in the literature review. Having secured the approval of the Open Universities Human Research Ethics Committee the researcher commenced the primary research.

Chapter 4 Collecting and analysing the data

The purpose of collecting and analysing the data from interview participants was to inform a response to the research question: 'To what extent are UK companies using Big Data to inform their marketing strategy?' To achieve this the primary research addressed:

- How do firms define Big Data and perceive its usability and relevance to industry?
- Which aspects of marketing strategy are informed by Big Data?
- To what extent do organisations have the necessary skills, resources and capabilities to use Big Data effectively?

4.1 Collecting the data.

The data were collected as outlined in Chapter 3. The interviews were carried out over a two month period (June – August 2015). The researcher used convenience sampling and identified seven potential interview candidates, each representing a single industry sector.

The seven participants represented a marketing consultancy (referred to as ConsultancyCo), an education and training company (EducationCo), a food retailer (FMCGCo), a bank (FinanceCo), a not-for-profit organisation (MembershipCo) a newspaper business (PublishingCo) and a homewares retailer (RetailCo). Appendix C provides a summary of the participant information.

The researcher made contact by emailing each of the potential participants and asking them to take part in an interview. A brief explanation of the project's purpose was

provided. This was followed by a phone call to confirm the arrangements of date, location and timing and the need to record the interview.

4.1.1 Preparation

The interviews took place as planned. After the first interview the researcher felt the interview process would be improved if the researcher was more familiar with the nature, scale and scope of the participant firm's activities and their corporate and marketing strategy. The researcher read the Annual Reports of the participant firms, to provide this information, as preparation for the interviews. The discussion was semi-structured, taking account of findings from the literature review. The interviews all took around an hour with a short period of greeting and explanation of the project before the interview recording started. Two interviews were recorded in note form, rather than audio-recording; this allowed the identification of themes but limited the direct quotations available from those participants. The interview recordings were transcribed using an experienced transcription service.

4.1.2 Coding

The researcher coded the transcripts and the written notes using NVivo qualitative research software. Appendix D is a sample from a coded transcript. By studying the transcripts the researcher identified themes raised by individual participants which were then mapped. Appendix E is a sample of an interview map. Maps were then compared, which highlighted commonalities between participants and divergent approaches. The NVivo software allowed quotes and comments from different participants to be stored together under a theme. The use of maps showing interview themes and the theme-coded interviews helped in the analysis of large amount of interview data.

4.1.3 Unforeseen circumstances

Four unforeseen circumstances arose:

- The timing of the interviews during school holidays meant that some analysis commenced before all interviews were completed. The researcher then revisited the themes and participant contributions to do justice to the breadth of interviews.
- The first interview acted as a pilot for the others, ensuring that recording software was readily available and improving preparatory research into participating organisations.
- One of the participants while willing to be interviewed requested that his comments were anonymous. As a Director of a major financial institution, there was a potential commercial or political risk from attributable quotes being incorporated in the research. The researcher was able to include ideas from his interview but has not provided details of the firm in Appendix D - The Participant Information Summary.
- It is possible that the inclusion of a definition of Big Data in the 'Information Sheet and Consent Form' (Appendix B), for the purpose of explaining the study, may have contaminated the answers to the first sub research question: 'How do firms define Big Data and perceive its usability and relevance to industry?'.

4.2 The data

The coding themes emerged from the content of the interviews, rather than being defined by the literature review. Six common themes developed:

1. Definitions of Big Data, including its usability
2. Market research and segmentation

3. Product development, including the role of the supply chain
4. Promotion
5. In-house capability and contracting out services
6. Investment in Big Data

4.2.1 Definitions of Big Data

All interviews commenced with a brief discussion about the definition of Big Data.

Without any input from the interviewer, the participants from Finance and Membership both outlined their understanding using Laney's (2001) '3Vs' of volume, variety, velocity but without referring to veracity. Because of the comprehension of the Big Data concept using the 3 Vs, the interviewer also used the 3Vs to gain a common definition with the other interview participants.

FMCGCo Manager introduced the relevance of 'veracity' in his definition. He identified the importance of complete and accurate data:

40% of the volume go through on credit cards...The rest you have to guess at, which is a big step that guess, because it can be completely different behaviours whether you're paying on a credit card or cash.

a) Examples of Big Data application

All of the interviewees supported their definitions with examples of Big Data, particularly in operational environments:

I think there are certain industries that genuinely warrant the use of big data, but I don't think there's that many. The aviation industry, where they analyse... everything relating to passengers, destinations, legalities, aircraft, currencies...

That's where, for me, big data comes into play in a sector like that.

MembershipCo Manager

PublishingCo Director gave operations examples from his company:

Data is captured and recorded... speed, tension, temperature, humidity, oil viscosity etc. all being constantly monitored. There are layers of information all on systems which you can go back and analyse.

A marketing perspective on Big Data was introduced by the Membership interviewee who explained: *"If you're talking about big data, it's companies like Facebook, when you consider millions of customers, millions of profiles, all those different interactions basically digitising their whole life".*

The FMCGCo participant made the distinction between CRM data of customer contacts for complaints, competitions etc and Big Data in the forms of transaction and storecard data. He described his firm's use of barcode scanner data as Big Data; recording 13 million transactions per week.

All of the participants talked about Big Data scenarios in other organisations. Only PublishingCo and FMCGCo gave examples of their own companies Big Data applications. Those giving external examples used examples from previous employment, competitor activity or from their consultants.

b) More data

When talking to participants about their firm's Big Data use in informing their marketing strategy, a common view was that the firm's marketing benefitted from the availability of greater amounts of data. However they were reluctant to describe it as Big Data. The interviewees from MembershipCo, RetailCo and EducationCo all identified their main

sources of IT-based data as their CRM system and the Google Analytics generated from their website. As the MembershipCo participant articulated: *“Every company has access to much more data than they’ve ever had, and ...we’ve got terrific amounts of data available free of charge through Google, as well as packages that we buy to overlay that data, to draw insight”*.

However, Google Analytics were not universally praised:

It says, numbers of users, hits, pages viewed...it doesn’t say which pages are hit most frequently, why they have been hit. We don’t know whether the hits are because of something of interest, something funny on it, something we should concentrate on. It doesn’t tell us have they read it, responded, absorbed the information, got something else from it, if they are looking at competitors. Frankly it doesn’t tell us much at all.

ConsultancyCo Director

MembershipCo Manager went on to explain about his firm’s five year aim for the use of Big Data:

The overall aim would be to have this huge data warehouse where all of your data goes in, everything you have on every touch point and so on, and then you have a series of applications that ... you can enter ... and get the slices of data relevant to that issue, that challenge. CRM would just be one application of 50 applications that you would have, where the CRM aspect is just your marketing and contact database element.

Head of IT, MembershipCo.

c) Hype around Big Data

Half of the participants expressed scepticism about Big Data. The Finance interviewee felt that Big Data was adopted by the Big Four consultancies as a tool to engage with companies. The Membership participant was more moderate in his view:

I think recently it's been a bit of a buzz-word, so every company is using the term, and trying to persuade stakeholders and so on that they're gradually working their way to utilising the insight from data. I think the big – or the new thing - is actually the term 'Big'.

The PublishingCo Director felt Big Data was seen as a panacea:

It's like the fairytale 'The Emperor's New Clothes'. There are crowds of people saying this is great...we could do this and this. No one dares say 'Can I just tell you, you are wasting your time here. You should just put a big poster next to the M6 that says £5 off £40 or a big poster on the M6 slip road directing you to the shop'.

d) The application of Big Data

The Finance and Membership participants emphasised that there is so much Big Data that the firm has to decide what is useful to inform their decision-making. FinanceCo Director commented that *"88-99% of Big Data is useless in reality"* noting that *firms need to identify the Data that is usable to them*. The MembershipCo Manager also talked about finding the useful elements of the Data:

...which of it is relevant to the challenge you've got? Because you might discard data that actually is very relevant, and similarly you might not be collecting something that is very relevant.

MembershipCo Manager

Companies need to invest appropriately in Big data was raised by ConsultancyCo and PublishingCo:

Companies need to make a response that is a proportionate response to the data... they don't have millions or billions to throw at it. Maybe 5, 10 or 50 thousand (pounds) to throw at its use. What is proportionate based on turnover.

ConsultancyCo Director

PublishingCo Director commented "Just because a company with Big Data can provide a solution, doesn't make their solution better value".

4.2.2 Market research and segmentation

a) Market Research

Several participants identified Big Data as providing insight into customer behaviour. The Education participant commented: *"Big data is allowing you to basically look through the curtains. You can see how people are behaving. You can watch them if you have got the skill set to be able to do it. Not ask them, but to see for yourself".*

The veracity of Big Data for market research was raised by FinanceCo Director. He emphasised the power of 'crowd sourcing' of data, for example, through customer reviews on travel website such as Trip Advisor and Expedia. He thought crowd sourced data provided more truthful data and thought senior executives would learn more from third party reviews than from their own firm's reviews.

A number of concerns were also raised about Big Data as a research tool. EducationCo Director emphasised that market research extends beyond customer data. She referred specifically to the demise of Big Data experts Tesco:

Regardless of their excellent focus with Big Data, they still needed the big picture of what is actually going on outside....it isn't just what customers are doing, it's this whole change in landscape.

The FinanceCo interviewee expressed concern that he was not *"sure how well organisations have translated customer originated data into organisational benefit"*.

b) Segmentation

Having established the importance of Big Data as a market research tool, several of the participants highlighted the value of segmenting the data to make it more meaningful.

ConsultancyCo described her clients' experience:

"They are largely segmenting customer data. Trying increasingly to break it down into segments where they can be more competitive or do something new. They are struggling to differentiate themselves; there is virtually nothing to call on price.

ConsultancyCo participant

... you can dissect the audience based on whether they're brand new and never been before, or they're returning. That then has the opportunity to shape future campaigns, future products... the time you interact with your customer for their preference, you know, particular days, particular times, these kinds of things.

MembershipCo participant

The PublishingCo participant noted there was a balance to be found between determining the relative value of targeting a reasonably identifiable segment compared with the micro effort of finding a particular customer.

Different segmentation strategies were identified. The Retail participant cited mobile phone company segmentation based on 6 types of customer, such as 'sleepers' who retain their contract over time and 'changers' who change contract each year.

The RetailCo, MembershipCo, EducationCo and FMCGCo participants all expressed a view that their organisations were not carrying out sufficient segmentation to enable them to undertake more targeted marketing activities. They felt they would benefit from a better understanding of their customers and what their customer segments are doing.

4.2.3 Product development

Four interviewees identified ways in which Big Data had led to innovation in product and service development. This included ideas from other corporations and their own experience. Half the participants identified the role that the supply chain plays in driving an organisation to innovate using Big Data. Two of the participants talked about product development as a spin-off from the data, that is, from the data exhaust.

a) The demands of the supply chain

The RetailCo Manager commented *"A lot of retail activity is driven by the supply chain"*. Suppliers were also the driver for FMCGCo to improve their Big Data. By having linked customer and transactional data available, their suppliers would spend their promotional budgets with FMCGCo rather than their competitors. In addition the Big Data could inform new product development.

"If brands are trying to...have another variant of the same brand... if the three were split across completely different baskets, you might say, well, a fourth one might add to incremental sales".

The EducationCo participant talked about how one group of customers were demanding complex information which had driven the organisation to improve their data recording and communication: *"... they are using that for lead generation. They want to know how many times people are looking at their stuff. And how we are pushing people to look at their stuff?"*

EducationCo participant

In contrast to suppliers encouraging data collection, FinanceCo director indicated what happened if customers failed to engage suppliers. He described the recent failure by Apple to get the new Apple Pay product off the ground. Apple Pay required the transition of Big Data on customer financial transactions through the supply chain. He commented that the launch failed because Apple had not engaged their suppliers, the banks, so the Data to feed their new product was not available to them.

b) Data exhaust

Although Big Data can provide information in response to a specific firm enquiry there can be other uses and applications of the information, which might be referred to as 'data exhaust'. Although FMCGCo's improved Big Data was supplier-led, there were additional benefits of the Big Data system for the firm's own activities. For example they could analyse customers' baskets and changing buying patterns:

If you want to 'de-list' a (product)... the example used commonly is 'spelt bread'. If you take out spelt bread from your range... it's a specific thing the customers want.

If they don't get that item...they'll take their entire basket somewhere else

4.2.4 Promotion

The FinanceCo participant defined a clear role for Big Data:

"The origin of using Big Data in marketing is to improve targeted marketing". He also

emphasised promotion as the driver:

Not much of it comes back to stock control...Most of it comes back to what do you want to promote.... where does it look like we've got holes in ranges? Where can we get funding from suppliers? That's what initially fuels it.

The type of Big Data available to direct the marketing and service activity was outlined in the MembershipCo interview:

They know the destinations you like, they know the flight times that you prefer, they know the kind of package holidays that you want, if you're a family, they know security's extremely important, they know the food you like, etc. and it's about providing that customer experience then.

He went on to say *"...it's about relevancy for the customer"*.

The PublishingCo Director noted that the availability of Data doesn't require a company to use it, giving the example of targeted mobile phone promotions:

The phone can tell where you are. A cinema might decide to run a promotion so when you, a cinema-loving teenager, happens to be walking 50 yards from the cinema, it texts you an offer for cinema tickets at £1 each for the film that's about to start. The potential is there. You could charm X into the cinema. How much income does it generate? You might get 3 kids walking in there with their pound.

He pointed out the cost of that promotion: *"It's expensive, targeted marketing is expensive"*. He adds: *"... you need a huge amount of data and you are following*

individuals and you need to know if they are going left or right. It's massive information; it needs an army of developers and fields full of servers".

a) Website

Several of the participants commented on their website as a means of generating Big Data to improve their promotion; their emphasis was on Search Engine Optimisation and raising their profile with Google. The RetailCo Manager highlighted the main area of digital development as the website: *"The priorities are Search Engine Optimisation (SEO) and the affiliate programme of sponsored links"*. The MembershipCo interviewee outlined the tactics for raising their profile through content management:

...because the audience wants it, we also know that other websites and mainstream journalist websites will also pick up on it and are likely to cross-reference it in ... one of their journalistic stories. So we get all that referral traffic, and it's building our brand as well...also you're getting the brand profile of BBC or Sky News or something like that. It's endorsing what you're doing.

Head of IT, MembershipCo

He also talked about the impact of this approach on SEO:

So you can see how it's building your brand, appealing your audience, and we are helping your domain authority, which effectively is free marketing because you appear higher in the search rankings when someone searches in Google... So that's how the data has helped us shape campaigns, shape messaging, improved our brand presence and also helped us with further free marketing.

c) Social media

Social media was highlighted as a digital promotional tool where the data generated was not easy to segment or always possible to analyse. The RetailCo participant made several comments on their application of social media:

(We) have a small social media team and take a three pronged approach to social media engagement – Twitter, Facebook and Pinterest (a lifestyle site). We currently use Twitter but find it a blunt tool as regards marketing.

He went on to comment: "... it is difficult to know how much to invest in social media activities".

The RetailCo participant's organisation is interested in building local social interactions (LocSoc) using the power of social media: *"... a store could support local groups and invite them to classes in store & then tweet or Instagram their work (in) the store...although you lose control of discussions on the brand to social media you are positively reinforcing the store with things of interest to customers".*

d) Retail promotions

The Manager of FMCGCo described a range of promotional activities used by FMCG retailers using Big Data. These included 'collector spends' engaging customers for weekly shops over a number of weeks; 'stretch spends' which encourage those with a certain value basket to increase their spend; brand-focused promotions funded by suppliers and price-matching rewards .

...by being able to more accurately target customers on collector schemes... which is the four weeks, or 12 weeks up to Christmas, etc, there can be millions of pounds of savings within that.

FMCGCo Manager

4.2.5 In-house capability and contracting out services

a) Improving the usability of existing data

Commonly, firms felt that before seeking to use Big Data they needed to improve the usability of their existing data, specifically their CRM systems and the data available and utilised from their own databases. EducationCo, MembershipCo and FMCGCo participants felt that they were at a disadvantage because they had originated as 'bricks and mortar' businesses, rather than being digital from the outset:

FMCGCo described the loss of data in streamlining multiple databases to reach their Big Data solution:

...when we started the card, in fact we had the complaints and competition data, so you'd just got lists and lists and lists of email addresses but part of the problem was what permissions had been granted against each of the individual competitions. Most of them were robust but we couldn't say they all were so it was almost easier just to say we'll start afresh...there were areas where we'd got good data or good databases. How they interact with the other sources of data outside of that is somewhat of a compromise.

The Retail participant also emphasised his firm's origins as a 'bricks and mortar business'. His view was that they first needed a CRM system that went beyond their current "rudimentary" system. He went on to compare his experience of a CRM system in the

mobile phone industry which started by recording all the personal details required for digital communications with those of an established store-based retailer:

... someone coming to our website ... we want to automatically create a record in the CRM to cut out the manual data entrance - I've got to ask those seven or eight things...Now, in other digital businesses you would have a CRM that would just, you know, to create a record, name and mail would be enough.

b) Technology

The Finance participant commented that: *"The technology can cope with the volume – databases, software and analytics. Even though the scale seems big technology can more than cope"*.

However, other participants felt that in some instances technology was lagging behind the development aspirations of the organisation:

So you needed broadband to catch up, you needed payment models to catch up, you needed content developers to catch up, you needed hardware to catch up. So it's all very well being a part of an early adoption stage, but often those business models early on don't always last... MembershipCo participant.

The ConsultancyCo participant agreed presenting a 'product lifecycle' case for digital products:

... 5 years later everyone has their head around it and it starts to work. We are lagging. The Big Data title has reared its head now and it will take 2/3 years to play catch up...managers are operating behind the curve and ...scrambling to use Big Data but not knowing how.

The Retail interviewee commented on the need for available tools for real time data analytics: *"The technology round the corner SAP HANA is the technology to process massive data in real time and open up the potential for us to analyse structured data, to know what they do in real time and make interventions in real time"*.

c) In-house skills

Most participants talked about their organisation's in-house skills regarding Big Data and Big Data Analytics. The PublishingCo Director commented: *"To have an effective model you need data but also clever people who can understand what the relevant pieces of information are. The challenge is to ask the right question"*. The ConsultancyCo Director agreed but expressed reservations about the data analysis skills in the wider economy: *"I don't think people are educated enough and don't think there are enough experienced people out there"*.

The MembershipCo Manager talked about his in-house resource:

We have a web traffic manager. His role is twofold; to look at some of the statistics himself so that he can educate internally what we should be doing, and also to manage the agency. And the agency provides a more sophisticated analysis.

The EducationCo had recently recruited 2 new staff:

... far more into analytics, data, lead generation and segmentation than the previous incumbents, so therefore, ... have put a lot more truck in analytics ... understanding people's behaviour on the website.

However, the same respondent went on to explain that she still felt the skills were technical rather than analytical:

The IT bit is becoming a given. We not asking them to program, we (ask) them to be able to use generic software ... so then you need business wit, business acumen.

She went on to say:

"You can produce all the data but you still need the people to do the storytelling bit. But it will be a technology based story which you will then have to tell from. We don't really have any analysts currently and actually that is a massive problem.

The EducationCo Director expressed concern about the knowledge gap between senior managers and young staff resulting from new technologies:

I sort of feel like, God I'm a generation out of this being, not something I can learn about but, actually something I know about. And they think nothing of it. It is like a gap in terms of leading a team that have all this knowledge of things you don't...

The RetailCo Manager expressed confidence in his firm's use of structured data but noted that his organisation "... (has) no competence in managing unstructured data".

d) Contracting out support

At a strategic level both the FinanceCo and RetailCo organisations were engaged with large consultancies for operational level activities involving Big Data. The FinanceCo firm with CISCO and the RetailerCo with IBM. This appeared to give them insight into the major Big Data projects their consultant were working on and raised their awareness of potential applications of Big Data.

The RetailCo Manager talked about having a small in-house team for Search Engine Optimisation but using a digital agency which advises on increasing rankings with Google while Google advise directly about banner ads.

The MembershipCo interviewee commented:

Google gives you the tools, okay? So they don't give you any advice, they just sort of say: this is all of your raw data. We tend to work with an agency that has the analytical skills to overlay all of that data, to sort of say: well, actually if you've got a budget of £100, so how do we best spend that £100?

The FMCGCo confirmed that they subcontract all transaction analysis to data agencies:

"because it's not a core skill or even a core function for the business". He described a basket analysis requested by a supplier "... it sounds simple but when you've got 600 lines in your range, you can just drown if you're not careful".

e) Organisational culture

The Membership participant felt that organisational culture made a difference to engagement with digital media and the acceptance of Big Data to inform activities:

It's been a cultural change ever since the new CEO came in - obviously to think more digitally, and it's my remit obviously to drive that cultural change. And I have good representation at campaign planning meetings where I sort of say, well, we're now going to hear from the expert in this area who is going to tell you really from a digital standpoint...

Head of IT, MembershipCo

The strategic commitment of the Board of Directors is critical to larger scale Big Data initiatives, because of the implications for the financial well-being of the business.

FMCGCo Manager gave an example of the costs of running price-matching schemes, comparing data between suppliers: *"1% plus another 1% to probably run the scheme, so they're investing 2% of their profits in that which, when they're running at 5% profitability, it's a hell of a lot".*

4.2.6 Investment in Big Data

Some issues regarding costs and proportionate investment have been highlighted as part of previous points in this section. Interviewees raised two further issues about investment in Big Data – the risk of non engagement and the effectiveness of investment.

a) Risks of non-engagement

The MembershipCo manager raised the issue of non-engagement with technology with his organisation:

... a risk of not doing this... how far you'd be left behind if we didn't invest in our platform, our people, our processes, etc, and start to build our maturity. The challenge is always how quickly that maturity evolves, and the reality is because we're not a digital business that evolution can be quite slow...

b) Effectiveness of investment

PublishingCo Director noted: *"There are diminishing returns applying to everything. Each step after the '£5 off £40 offer' is a whole lot harder... and the benefit is diminishing"*. He commented on the importance of investing in appropriate promotion:

The proportion of marketing spend spent on digital formats is more than 50%. Therefore the amount spent on other formats is less. That doesn't mean (the other formats) are less effective.

ConsultancyCo talked about balancing the return on investment:

They segment the market on a campaign basis because it costs so much. Unless you are a really rich organisation you can't run multiple campaigns. A less rich organisation takes the average state and targets that but that doesn't make the organisation move on because you don't understand the micro-segments. You get

*to the point where ...what has become the point of the micro-levels of data
because you can't use it.*

The interviews highlighted managers' experiences and views on what Big Data is and its contribution to market research, segmentation, product development and promotion. It also highlighted their in-house capability to use Big Data. The next section will discuss these findings in relation to the literature review.

Chapter 5 Discussion

This research study aims to address the research question: 'To what extent are UK companies using Big Data to inform their marketing strategy?' To answer the main research question there are supporting questions which will be considered in the light of the literature review and the findings from the interviews:

- How do firms define Big Data and perceive its usability and relevance to industry?
- Which aspects of marketing strategy are informed by Big Data?
- To what extent do organisations have the necessary skills, resources and capabilities to use Big Data effectively?

5.1 Understanding Big Data and its relevance to industry

This section will address the first supporting question 'How do firms define Big Data and perceive its usability and relevance to industry?'

Research participants had a common understanding of Big Data. Two of the participants defined it themselves using Laney's (2001) '3Vs' definition of data with volume, variety and velocity and the others accepted Laney's definition as provided by the researcher. FMCGCo also identified 'veracity' as a factor in their Big Data definition. Only FMCGCo used data that complied with the '4Vs' definition to inform their marketing strategy.

Other participants gave examples of the use of Big Data by industries such as aviation, particularly in an operational context. When they talked about Big Data in marketing they used global examples such as Facebook, emphasising 'millions of customers'. This way of thinking concurred with the McAfee and Brynjolfsson's (2012) research which focused on the application of Big Data by very large, public companies. By giving examples remote

from their own firms the participants appeared to distance themselves from Big Data being relevant to them.

Three participants were sceptical about Big Data, suggesting it was hype. They described it as a 'buzz word' and indicated that Big Data was a marketing ploy by consultancies to engage firms. Two participants had working relationships with consultancies in relation to IT developments which may have influenced their viewpoint.

5.1.1 Applying the '4Vs' definition of Big Data

To understand the extent to which firms are using Big Data it is useful to see how closely the data they are using conform to being Big Data.

a) Variety

Whilst the literature indicated a broad range of Big Data sources available to firms (Table 1), the MembershipCo, EducationCo and RetailCo participants emphasised their main sources of data as originating from their website and their CRM systems. They did not refer to external sources of data. Although they identified the use of tools such as SMS, call centre and social media for interacting with customers, they did not present these as source of data.

Although participants identified data coming in to them from a variety of sources, five of the seven interviewees identified that their firm's CRM systems were inadequate for current data let alone more complex content. Only the RetailCo Director indicated a forward plan for increased use of data, including unstructured data from social networks.

b) Volume

The interview participants supported the proposition that Big Data involve high volumes of information. The research participants shared the views presented by LeeFlang et al

(2014) that the explosion in information and potential business intelligence offers a source of competitive advantage.

The FinanceCo Director had suggested “88-98% of Big Data was unusable in reality”. The interviewees emphasised the importance of selecting the data that is relevant to the firm and proportionate to its turnover. This approach accepts that a high proportion of Big Data is ‘irrelevant’ to firms in reality, regardless of whether it is usable.

Certainly by using digital tools such as their own CRM systems, website, social media and bar code scanners the participants were in receipt of higher volumes of data than previously. Regardless of whether the volumes are small the points raised previously about selecting relevant data, proportionate to the needs of the firm are still pertinent.

The literature review raised the question of how usable the volume of data is to inform marketing strategy. The participants indicated that the data available to them were not being applied. They identified that this was, in part, because their database or systems could not cope or because they had insufficient analytical capability. This lack of application indicated the data wasn’t usable by firms.

c) Velocity

Velocity of data indicates that the firm can receive the information at speed and suggests agility of response. The participants commented that data were available more readily than previously and could be collated and reported on more effectively. However participating firms were using data reports as historical records, as they had for traditional marketing research. Even the Big Data being used by FMCGCo were sent to a data agency for analysis. This indicated that although the data might be arriving at the firm with velocity the firm’s ability to make an agile response was slowed, as a result of the pace and process of data handling and analysis.

Although 'real time' is not a critical aspect of Big Data, it is interesting to note that none of the participants, including FMCGCo were using 'real time' data to inform their marketing strategy.

d) Veracity

Veracity of data was only mentioned by those participants using Big Data. They emphasised the importance of complete and accurate data as a basis for marketing decisions. It was noted that this data were coming from the information technology function rather than from the marketing function.

5.2 Big Data and Marketing Strategy

This section will address the supporting research question 'Which aspects of marketing strategy are informed by Big Data?'

The interview participants were senior managers from IT, Marketing and Executive Boards and although not all from the marketing function, there was universal understanding of what a marketing strategy was. All participants identified, unprompted, ways in which data could be used to inform marketing activities. CRM was a widely accepted tool used by participant firms, in line with Payne and Frow's (2005) study. RetailCo talked about the future of CRM as part of a Big Data repository. FMCGCo concurred with Park and Kim (2003) that being able to identify customers was critical to understanding their needs.

Participant contributions were predominantly at the business strategy and operational strategy level of Webster's (1992) model. At business strategy level, participants emphasised market research and segmentation and at operational level they emphasised the marketing mix – including promotions, pricing discounts and product development.

5.2.1 The influence of Porter's strategic typologies

The literature review highlighted Valos et al's (2007) research into strategic typologies building on Porter's work. These typologies appeared particularly relevant as themes emerged from the analysis of participant interviews. Valos et al had identified focus and cost leadership strategies and divided Porter's 'differentiation strategy' into two - product differentiator and marketing differentiator strategies. Research inputs from the interview participants showed a strong association with the two differentiator typologies with a high level of comment around Big Data and product development and Big Data and promotional activity.

5.2.2 Applying the Marketing Mix

The Marketing Mix provides an appropriate marketing tool with which to consider the use of Big Data to inform marketing strategy. Fan et al's (2015) identified five applications of Big Data analytics through the lens of the Marketing Mix. This approach provided a useful structure for this analysis.

a) People - Customer segmentation

As in Fan et al's (2015) research, participants in this study also emphasised the importance of segmentation. They saw it as shaping their campaigns and products in response to a better understanding of customers and their needs. This study highlighted two further areas: firstly, participants emphasised choosing 'relevant' customer segmentation, giving examples of different types of innovative segmentation such as that used by mobile phone companies. Secondly, several participants identified that they could not capitalise on customer relations because of their organisation's poor customer segmentation. Thirdly, the interviewees emphasised the value of using data beyond

customer information; they used the example of Tesco to highlight the need for a wider view on market research to encompass data such as environmental scanning.

b) Product – product development

Although Fan et al (2015) emphasised reputation management in their study, in this research participants emphasised the application of Big Data analysis for product development. The majority of participants identified the importance of the supply chain data requirements in driving these developments. They also gave examples of the spinoff of new products and services and new and iterative product development as a secondary outcome of Big Data analysis, which might be referred to as data exhaust.

c) Promotion – Improved promotional marketing

This study supported Fan et al's (2015) findings regarding the application of Big Data for promotional marketing analysis. In this study the interview participants linked promotional analysis back to a better understanding of customers and improved promotion based on detailed segmentation. Participants highlighted their website and social media interactions as critical promotional activity. For several of the research participants Google Analytics was their main source of data analysis reporting and while social media were used, no meaningful analysis was carried out on the data generated by social media by any participants.

d) Place - Community dynamism analysis

The MembershipCo and EducationCo participants used location-based promotion, based on CRM and web based data, however they relied on content, rather than advertising, to engage customers with relevant local activities. In this study only one participant

highlighted social media as providing a potential community link between customers and, in their case, retail stores, and its relevance to their company's strategic marketing aspirations.

e) Price – Discount pricing strategy

Only one of the participants in this study highlighted the explicit use of Big Data in setting pricing strategy. FMCGCo Manager talked about using Big Data to inform trade-up / tailor promotional activities, which included elements of price discounting strategy.

5.2.3 Big Data Analytics

Researchers such as Bloomberg (2012) indicated a high use of analytics by the largest public companies. The UK firms interviewed for this study emphasised the use of free analytical data from Google Analytics as their main source of digital data analysis. This analysis was used to direct promotional activities. Three participants identified the contracting out of complex analysis to address specific queries. FMCGCo identified that analysis was contracted-out because it was not a core skill or function of the organisation. Using Chen's (2012) model, four of the seven firm's Business Intelligence Analytical position would rate as BIA 1.0 (with limited capability of using web analytics through the Google software). Two of the firms who are using Big Data within their organisations would rate as BIA 2.0 as their intelligence is web-based and involves web-analytics for data querying. Neither of the BIA 2.0 firms were using social media analytics. The application of text, network or mobile analytics was not identified by any participants.

Most of the firms referred to legacy data, which they had used prior to the Big Data phenomena and was central to their operations. FMCGCo described how his firm had streamlined databases to accommodate their Big Data inputs. Other participants commented that their legacy data wasn't up-to-date or of a standard that could usefully be analysed.

Boyd and Crawford (2012) suggest a mythology associated with Big Data of objectivity and accuracy. This viewpoint was not expressed by any participants although there was an indication that they believed Big Data would improve their knowledge and understanding of their customers' behaviour and preferences.

5.3 The challenges of using Big Data

To address the supporting question 'To what extent do organisations have the necessary skills, resources and capabilities to use Big Data effectively?' this section will consider technical investment and people-related challenges.

5.3.1 Technical investment

None of the participants identified investment in technology as a restricting factor in their use of Big Data. Instead they identified the need to improve their use of existing data. They also highlighted the importance of selecting appropriate data to inform their decisions and making investments proportionate to their budget.

Whilst participants identified a limited range of analytics software, the same website analytics software was used by most participants. Operational expenditure to contract out analysis to digital agencies was highlighted by more than half the participants on the basis that they did not have the technical or financial resources or the people capability to

invest in it themselves. FMCGCo noted that his company's strategy was to contract analysis out because it was not a core skill or a core function.

5.3.2 People related challenges

a) Goals

Little was said by participants about strategic goals driving the use of data-driven insights in their firm. However EducationCo and MembershipCo participants talked about their increased use of data insights with colleagues to shape promotional and sales campaigns and new and iterative product / service development.

b) Culture and cross-functional working

The MembershipCo Manager, in this study, highlighted the importance of a digitally-engaged Chief Executive in helping drive data-driven changes in their organisation and the engagement of other teams in the process.

The EducationCo participant highlighted cross-functional work with other teams and also with suppliers for data collection and product development. De Swaan Arons et al's (2014) research presented an 'orchestrator' model characterised by flexible roles and fluid responsibilities. The majority of participants described their organisations in more traditional ways but with an emphasis on cross- team working and they evidenced a responsiveness to digital and social media that indicated greater fluidity than a traditional, functionally silo-ed organisational structure.

c) Talent management

Participants identified their companies as having in-house skills for data presentation but limited analytical capability. There was a strong reliance on analytics generated by software and contracting out more complex analytics, as required.

From evidence provided in the interviews, it would be a challenge for organisations to effectively transform data into useful information, which in line with Moldoveneau's research (2013, cited by Moorthy, 2015). The EducationalCo Director was concerned that insightful analytics required the ability to storytell from data which required business acumen. However ConsultancyCo Director felt it was a wider problem and with the newness of this type of data, that there wasn't availability of knowledgeable and experienced data scientists and analysts to carry out this information transformation.

There was a concern that with the growth of technologies and their potential for data generation, senior managers were finding themselves managing functions over which they had little knowledge and therefore were ill-equipped to lead.

The Conclusions from this Discussion can be found in Chapter 6.

Chapter 6 Conclusions and limitations

6.1 Addressing the Research Question

The study seeks to address the Research Question 'To what extent are UK companies using Big Data to inform their Marketing Strategy?' The findings of the research study are that in response to the changes in technology UK firms are using more and different data to inform their marketing strategy but few are responding to the increased velocity of Big Data. Of the seven research participants only one firm was using Big Data to inform their marketing strategy.

To understand which aspects of Big Data firms are using to inform marketing strategy it is helpful to consider the supporting questions.

6.2 Addressing the supporting questions

6.2.1 How do firms define Big Data and perceive its usefulness and relevance to industry?

The participating firms agreed that Big Data were data available from a variety of sources, in large volumes and available to them at speed. The idea of accuracy and completeness of data (veracity) was only raised by those two participants who were using Big Data.

With regard to the usability of Big Data, the majority of firms were using traditional data sources with limited use of digital data. Only one company had a clear forward plan for improving the firm's use of data and data analysis. The velocity of data and the potential to improve agility was being negated by the methods of data handling and analysis. Study participants were clear that to cope with the volume of data they would need to choose

data that was relevant and proportionate to their firm and their budget. However, as Big Data were not being widely applied by participants it must be concluded that firms were not finding it usable.

6.2.2 Which aspects of strategy are informed by Big Data?

Study participants were predominantly interested in the application of data at business and operational marketing strategy levels. Data were used to inform tactical aspects of the marketing strategy rather than informing corporate changes. Using Chen et al's (2012) model, none of the participants had a 3.0, advanced level, business intelligence analytical rating. More than half had the lowest 1.0 rating. These low ratings would inhibit a firm's ability to analyse Big Data to inform their strategy.

Drawing on Fan et al's (2015) research the study used the '5Ps' of the Marketing Mix to ascertain the aspects of marketing strategy informed by Big Data. Participants highlighted the importance of customer segmentation to improve targeted marketing (people). They emphasised the use of Big Data analysis for product development and noted the role of the supply chain in driving changes in this area (product). Participants identified that Big Data provide the potential to better understand customers and improve targeted promotions (promotion). Community involvement (place) and discount pricing strategy (price) were addressed by single participants.

6.2.3 To what extent do organisations have the necessary skills, resources and capabilities to use Big Data effectively?

Technical investments in hardware and software were not limiting factors in participant companies using Big Data. Decisions to contract out analysis were strategy and people-related rather than investment constrained decisions.

In considering people-related challenges the contribution of the CEO in encouraging data-driven changes was noted, impacting on organisational culture and behaviour.

The main area impacting on capability to use Big Data was talent management.

Participants described limited in-house analytical capability identifying that analysts require business acumen and the ability to interpret and tell stories from technical data. These were skills thought to be in short supply. There was also a need for senior and marketing executives to increase their understanding of information technology in order to understand the potential of the data and to be able to specify the firms' data requirements.

6.3 The validity and limitations of the research

6.3.1 Validity

The research was successful in gathering rich, qualitative data from executives who are in a position to inform marketing strategy. The interview methodology allowed a 'bottom-up' generation of information from participants. The loose thematic structure enabled broad comparison of participant experiences and viewpoints.

6.3.2 Limitations

The method of sampling for the study excluded those firms who had started with new technologies and companies with online presence only. Including these types of organisations would have provided a broader spectrum of data experience than 'bricks and mortar' firms. Other considerations would be giving greater consideration to the size of the firms, their age, their UK base.

A sample based on firms who declared they were using Big Data would have ensured that all participants would have had clear views on how their firms were using Big Data to inform marketing strategy.

6.4 The contribution of the research

The research responds to a gap in the academic literature on the use of Big Data in strategic marketing. Because the sample size is small, with only one of the seven participating companies using the full extent of Big Data with regard to its volume, variety, velocity and variety, the contribution of the research is modest, though some interesting areas for further research are highlighted. The study is potentially useful for practitioners interested in how other firms are using Big Data to inform their marketing strategy. From an academic perspective, the study highlights the limited extent to which firms are using Big Data to inform their marketing strategy. This could inform a more extensive, theoretical study into whether this finding holds true with a larger-scale, cross-industry participant group or in a specific industry sector. The study also identifies the participants' emphasis on the use of Big Data for developing marketing insights, creating segmentation approaches and informing the marketing mix, each of which might help inform future academic research in these areas. Finally, the study identifies the challenges for firms using Big Data to inform their marketing strategy, such as difficulties associated with having limited capability in analytics and a shortage of suitably skilled talent. These issues are relevant for marketing education practitioners, such as those in Further, Higher and Executive Education who might use the information as a catalyst for a wider study into the curriculum requirements for marketing in response to Big Data and the digital era.

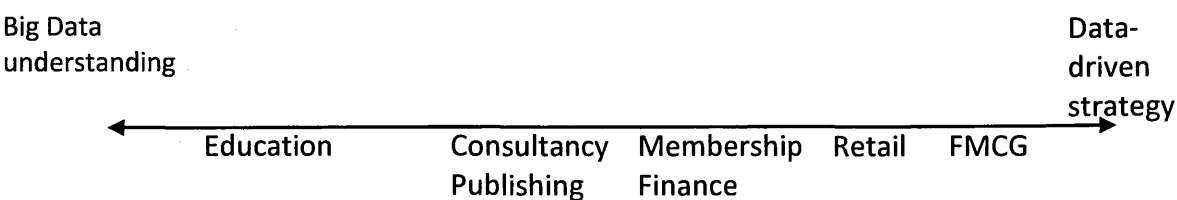
6.5 Potential PhD research

The broader research aim was to produce a study which could act as a pilot or inform wider PhD research. This study has achieved that aim. Following the interviews the researcher felt it was possible to position companies along a continuum between having data awareness and data-driven strategy, from a marketing perspective. Factors influencing positioning, generated by this study, would include:

- Using Big Data to inform strategy
- Board commitment to data driven strategy
- Strategic targets to use analytical software
- Exposure to working with consultancies with Big Data experience
- Being led by strategic or technical imperative
- In-house capability to respond to Big Data analytics

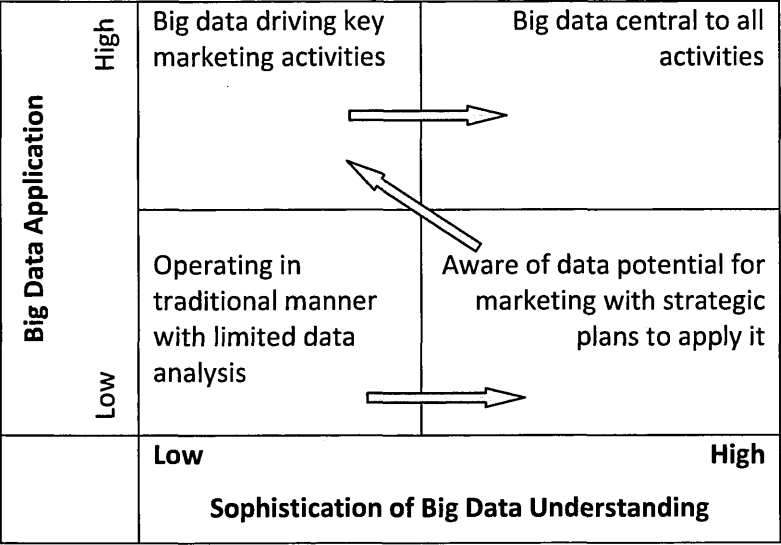
For example:

Fig. 1. Continuum of Big Data understanding and Big Data-driven marketing strategy



However because of the range of factors influencing positioning, it might be more useful to represent the model as a matrix. The matrix axes would be Sophistication of Big Data Understanding and Big Data Application. The organisation could be positioned within it according to the factors mentioned previously. A progression route through the matrix is suggested, with organisations able to progress to higher levels of understanding of Big Data and its application to marketing strategy over time. This Matrix is shown in Figure 2.:

Fig. 2. Big Data Application Matrix



Future PhD research could investigate the validity of such a model by testing it with a wider audience. To be able to populate the whole matrix the study would need to include firms who were initiated with technology as well as multinationals. This research could use a qualitative study to identify other factors affecting positioning and then a quantitative approach to test the model with a wider audience. Alternatively the model could be tested with a single industry. This could benefit practitioners and educators in understanding, in greater depth, and with greater sectoral relevance, the use of Big Data in informing marketing strategy.

Chapter 7 Research review

This Review considers the research process undertaken by the researcher in carrying out this research study and producing the MRes dissertation.

7.1 Strengths in the research process

Having come into the MRes with twenty years experience as a Project Manager I was able to bring disciplines such as project scheduling to the research process. Appendix F is my schedule for the MRes including the research project and dissertation. Having experience in this discipline meant I was always confident of meeting the research deadlines.

From my industrial background, I also had a lot of business contacts. Many of these are senior executives and this was useful when identifying potential interviewees for the research. In addition, I was able to identify contacts with responsibilities for information technology and marketing, which enabled me to carry out convenience sampling for my primary research.

Undertaking the taught MRes also gave me confidence that I could carry out the research in a professional and sound manner. I had full attendance for the course modules and robust grades for the coursework which ensured I had expert input into areas which were new to me. In particular I developed a capability to critique articles which I had no experience of. I also found a way to inventory the journal articles I was reading to enable useful content to be retrieved at another time. I attended the Open University Doctoral Workshops and other training programmes to gain additional knowledge (Appendix G).

A combination of the MRes Module D process of assignments and supervision was invaluable in carrying out the research study and producing an academically rigorous research report. It took some time and reiteration to identify a workable research

question and my supervisors provided support in identifying directions and references to inform that process. They also supported the development of my academic writing as the research report started to take shape.

7.2 Hurdles in the research process

Having spent twenty years in industry since my last academic qualification I found my practitioner inclinations were strong. I found the process of learning to critique articles extremely difficult, initially found myself drawn to practitioner journals rather than academic journals and I had to learn to write in a way that suited academic rather than industrial readers.

A further hurdle was that I had a strong marketing knowledge and experience but relatively little knowledge of information technology. This meant that I had to do a large amount of reading on information technology, digital developments and Big Data before tackling the research question. As it transpired, this gap in IT knowledge by marketers is an issue raised in my research study.

I found the process of identifying a Research Question challenging. I read copiously in the areas of marketing strategy, customer relationship management, information technology as it related to marketing and Big Data. In fact, I produced an entire literature review on E-marketing capabilities before deciding I had gone down a route which was extremely narrow and not really interesting to me. The research carried out was useful in forming my subsequent topic choice.

I started my research aiming to take a case study approach with a single company intending to talk to different staff involved in the launch of a major initiative using Big

Data. Although I had permission from the senior manager, a fortnight before the research was due to commence the company changed Chief Executive Officer and a total restructure of senior management team commenced. These events made the case study approach unworkable and a different research approach had to be determined.

The experience of carrying out research as part of the MRes programme has given me experience of the useful things that I can bring to the research process. It has also given me confidence of how the process works and the support and resources available when carrying out research. Finally, it has given me insight into the potential pitfalls of the process and the knowledge that an alternative approach can be taken.

References

- Berkowitz, E.N., Kerin, R.A., Hartley, S.W., Rudelius, W. (1997) *Marketing*. 5th Ed., Irwin McGraw-Hill
- Boyd,D., Crawford, K. (2012) ' Big questions for big data: provocations for a cultural, technological and scholarly phenomenon'. *Information, Communication and Society*. 15. pp.662-679
- Boyd, H.W. Jr., Walker, O.C. Jr. (1990), *Marketing Management: A Strategic Approach*. Homewood, IL: Richard D, Irwin. Inc
- Brady, K., Saren, M., Tzoukas, N. (2002) *Integrating Information Technology into Marketing Practice – the IT Reality of Contemporary Marketing Practice*. *Journal of Marketing Management*. Vol. 18, pp555-577
- Braun,V. Clarke,V (2006) 'Using thematic analysis in psychology'. *Qualitative Research in Psychology*. Vol3 pp77-101
- Brennan, R., Baines, P., Garneau, P. (2003) *Contemporary Strategic Marketing*. London. Palgrave Macmillan
- Byers.P.Y., Wilcox. J.R. (1991) *Focus Groups: A qualitative opportunity for researchers*. *Journal of Business Communication* Vol.28, pp. 63-79
- Bryman.A., Bell.E. (2003) 'Research Designs' in *Business Research Methods*, Chapter 2, Oxford, Oxford University Press.
- Chen, H., Chiang, R.H.L., Storey.V.C. (2012) 'Business Intelligence and Analytics: From Big Data to Big Impact'. *MIS Quarterly*. Vol. 36, No.4, pp.1165-1188
- Coltman, T. (2007) 'Can superior CRM capabilities improve performance in banking'. *Journal of Financial Services Marketing*.Vol.12, pp.102-114
- Dahlstrom, P., David, C., Hieronimus, F., Singer, M. (2014) 'The Rebirth of the CMO'. *Harvard Business Review*. August 5th available at: <https://hbr.org/2014/08/the-rebirth-of-the-cmo/>
- Davenport, T.H., Patil, D.J. (2012) Data Scientist: The Sexiest Job of the 21st Century. *Harvard Business Review*. October, pp.70-76
- Easterby-Smith, M., Thorpe, R., Jackson, P.R. (2008) *Management Research* (3rd edition) London, Sage Publications Ltd
- Fan, S., Lau, R.Y.K., Zhao, J.L. (2015) Demystifying Big Data Analytics for Business Intelligence through the lens of the Marketing Mix. *Big Data Research*, Vol.2, pp.28-32

Goi.C.L. (2009) 'A review of marketing mix: 4Ps or more?' *International Journal of Marketing Studies*. Vol.1, p. 2

Goulding,C. (2005) Grounded theory, ethnography and phenomenology; A comparative analysis of three qualitative strategies for marketing research'. *European Journal of Marketing*, Vol.39, pp.294-308

IBM big data platform [Online]. Available at: <http://www-01.ibm.com/software/data/bigdata/> (21.10.2013)

Kaisler,S., Armour,F., Espinosa,J.A., Money,W. (2013) 'Big data: issues and challenges moving forward'. *6th Hawaii International Conference on System Sciences, (HICSS)*, IEEE (2013), pp. 995–1004

Kohli, A.K., Jaworski, B.J., Kumar, A.(1993) 'MARKOR: A Measure of Market Orientation'. *Journal of Marketing Research* Vol.30 p.467

Kudyba,S. (2014) *Big Data, Mining and Analytics: Components of strategic decision making*. Auerbach Publications

Kumar, V., Reinartz ,W.J. (2006) '*Customer Relationship Management: A Databased Approach* '. John Wiley & Sons, New Jersey

Laney, D. (2001) '3D data management: Controlling data volume, velocity, and variety'. *Application Delivery Strategies*, META Group. Retrieved from <http://blogs.gartner.com/doug-laney/files/2012/01/ad949-3D-Data-Management-Controlling-Data-Volume-Velocity-and-Variety.pdf1>

Leverick, F., Littler, D., Wilson, D., Bruce, M. (1997) 'The role of IT in shaping marketing'. *Journal of Marketing Practice: Applied Marketing Science*. Vo.3, pp.87-106.

Leeflang,P., Verhoef,P., Dahlstrom, P., Freundt, T. (2014) 'Challenges and solutions for marketing in a digital era'. *European Management Review*. 32 (1), pp.1-12

Manovich, L. (2011) 'Trending: the promises and the challenges of big social data', *Debates in the Digital Humanities*, ed. M. K. Gold, The University of Minnesota Press, Minneapolis,

Manyika,J., Chui,M., Brown, B., Bughin, J., Dobbs., Roxburgh, C., Buyers, A.H. (2011) 'McKinsey Report: Big data: The next frontier for innovation, competition and productivity'.

Available at: www.mckinsey.com/.../Big%20Data/MGI_big_data_full_report.ashx

- McAfee, A., Brynjolfsson, E. (2012) 'Big Data: The Management Revolution'. *Harvard Business Review*. October ,pp.61-68
- Moorman, C., Rust, R.T. (1999) *The Role of Marketing*. Journal of Marketing. Special Issue, vol. 63. pp.180-197
- Moorthy, J., Lahiri, R, Biswas, N. (2015) 'Big Data: Prospects and Challenges'. *VIKALPA The Journal for Decision Makers*. Vol.40 (1), pp.74-83
- Morse, J.M. (1994) 'Qualitative research: fact or fantasy?' *Critical Issues in Qualitative Research Methods*. Sage, Thousand Oaks, CA
- Park, C-H., Kim, Y-G. (2003) 'A framework of dynamic CRM: linking marketing with information strategy'. *Business Process Management Journal*. Vol.9 pp.652-671
- Payne, A., Frow, P. (2005) A Strategic Framework for Customer Relationship Management'. *Journal of Marketing*. Vol. 69, pp. 167-176
- Piccoli,G., Ives, B. (2005) 'IT-dependent strategic initiatives and sustained competitive advantage: a review and synthesis of the literature'. *MIS Quarterly*. Vol.29. No.4. p747-776
- Porter, M.I. (1980), *Competitive Strategy – Techniques for Analyzing Industries and Competitors*. Free Press, New York, NY.
- Sethi, V., King, W. R. (1994) 'Development of Measures to Assess the Extent to Which an Information Technology Application Provides Competitive Advantage'. *Management Science*. Vol.40 pp. 1601-1628.
- Sheth, J., Parvatiyar, A. (1995) 'The evolution of relationship marketing'. *International Business Review*. Vol.4, pp. 397-418
- Sorofman, J., & Frank, A. (2014). 'What data-obsessed marketers don't understand'. Retrieved from <https://hbr.org/2014/02/what-data-obsessed-marketersdont-understand/>
- Snijders, C., Matzat, U., Reips,U. (2012) 'Big data: Big gaps of knowledge in the field of internet science'. *Journal of Internet Science*. 7, pp.1-5
- Starks. H., Trinidad. S.B. *Choose your method: A comparison of phenomenology, discourse analysis and grounded theory*. Qualitative Health Research. Vol. 17. No. 10. pp.1372-1380
- de Swaan Arons, M., van den Driest, F., Weed, K. (2014) The Ultimate Marketing Machine. *Harvard Business Review*. July-August pp.55-63.

Valos. M.J., Bednall, D.H.B., Callaghan,B (2007) 'The impact of Porter's strategy

types on the role of market research and CRM' *Marketing Intelligence and Planning* Vol. 25, No.2, p147-156

Webster, F.E. (1992) 'The Changing Role of Marketing in the Corporation'. *Journal of Marketing*. Vol. 56. Oct pp.1-17

Yin, R.K. (2014) *Case Study Research: design and methods*. Los Angeles. SAGE.

BIG DATA AND MARKETING STRATEGY
KEY INFORMANT INTERVIEWS - STRUCTURE

This document will be used to provide a semi-structure to the interviews

Interview Aims

The aims of the interviews are to use conversation with senior managers working in Information Technology and Marketing to identify their experience of using Big Data to inform their company's marketing strategy.

The broader research study involves developing a theory of the opportunities and challenges of using Big Data in developing marketing strategy, drawing on IT, practitioner and where possible marketing literature. The interviews have been designed to be semi-structured allowing the interviewer to gather data in a loosely, consistent format across the 10 interviews and to use prompts relating to specific Big Data theories during the interviews.

All interviews will be carried out by a single researcher and will take up to 1 ½ hours.

Interview Structure**1. Project background** *(rough timing 10 minutes)*

- Participants will be given a verbal explanation of the project, its background and aims.
- A short discussion to define Big Data may be required.
- Interview timing of up to 1 ½ hours will be identified.
- Permission to record will be requested, as per email brief; participant consent may be withdrawn at any time.
- Confirmation of the anonymisation of the data will be provided.
- Confirmation will be given that the interviewee will be given a copy of the transcript and a copy of the finished report.

2. Interviewee background *(rough timing 10 minutes)*

- Your role in the organisation; time with the firm; your background.
- Your involvement with Big Data and business growth.
- Business growth strategy of your organisation and specific business growth goals

3. Sources of Big Data *(rough timing 15 minutes)*

- Common understanding of what Big Data is
- Commonly used in the industry? By competitors?
- What data does the firm collect? External/ traditional / Big Data / internal?
- Does the firm buy its Big Data or generate it?

BIG DATA AND MARKETING STRATEGY

KEY INFORMANT INTERVIEWS - STRUCTURE

4. **The benefits of using Big Data** (*rough timing 15 minutes*)
 - By the organisation
 - By competitors / in the industry
 - Other than for marketing strategy e.g. selling on data/ productivity improvement
5. **Analytics** (*rough timing 15 minutes*)
 - In house or contracted? Resources to carry out analytics?
 - Types of analytics
 - How analytics are applied (Board level / New product / service development/ CRM)
6. **Obstacles to using Big Data to inform marketing strategy** (*rough timing 15 minutes*)
 - Technical hardware / software
 - Culture / cross team collaboration
 - Talent management
7. **Thank you for your time** (*rough timing 10 minutes*)
 - Confirmation of the timescales for the research & completion of the report.
 - Confirmation regarding consent and withdrawal from the research.
 - Any questions from the interviewee?

Ends..

TO WHAT EXTENT ARE UK COMPANIES USING BIG DATA TO INFORM THEIR MARKETING STRATEGY?

INFORMATION SHEET FOR PARTICIPANTS



Purpose

The development of the internet has brought with it a huge amount of data, initially from website sites and subsequently from social networking sites. The web-based data had increased volume, increased variety and increased velocity than previously, leading to its description as 'Big Data'. Since the widespread uptake of mobile devices Big Data has become larger and more complex, providing firms with the potential for more precise market information if they can access the data, analyse it and direct their marketing strategy in response to the data.

The purpose of the interviews is to gather insights from senior managers on their own experience of Big Data and its relevance and application, in their industry and workplace.

Data collection and your confidentiality

We have identified you as having experience of information technology and marketing working together and we would like to interview you for this project. The interview will explore your experience of how IT and marketing combine to deliver a joint initiative that addresses customer needs.

The interview may be conducted either at your workplace, at the Open University Business School or in public place at a time agreed.

It facilitates the research if we can digitally audio-record the interview, but if you are not comfortable with this, we will only make notes during interview. To maintain confidentiality we will code the interview so that your identity will be kept separate from the data unless you give additional consent for disclosure. If we wish to quote verbatim anything you have said we will seek your permission for this before we include the quote using a pseudonym (e.g. Finance 1; Marketing 1).

The data from the interview and any documentary evidence you may be able to provide will only be used for academic purposes, including journal publications, conference presentations and a Master of Research dissertation. The data collected will be anonymised and securely stored on

password-protected computers for a period of 10 years, only transferred using encrypted USB Flash Drivers and after that period securely destroyed. Electronic data will be only accessible to the researchers and if required to the personnel for an authorized academic audit.

Your rights

You may choose not to participate in this research, omit or refuse to respond to any question, retract any comment or the whole of your interview up to the end of July 2015. You may ask the researchers questions to clarify any further points about the study.

Please feel free to contact me or my supervisors at the Open University for the details.

Claire Brewis	Department of Strategy and Marketing
Researcher	Open University Business School
	Milton Keynes, MK7 6JB
	claire.brewis@open.ac.uk +44(0)1908 659844

Prof. Sally Dibb	Department of Strategy and Marketing
Lead Supervisor	Open University Business School
	Milton Keynes, MK7 6JB
	sally.dibb@open.ac.uk +44(0)1908 652787

Maureen Meadows	Department of Strategy and Marketing
Supervisor	Open University Business School
	Milton Keynes, MK7 6JB
	maureen.meadows@open.ac.uk +44(0)1908 654105

TO WHAT EXTENT ARE UK COMPANIES USING BIG
DATA TO INFORM THEIR MARKETING STRATEGY?



STATEMENT OF CONSENT

The purpose of this consent form is to clearly state the conditions of your participation in the research. It is designed to protect your rights as described in the information sheet. Please complete and sign below if you are happy with these conditions.

I consent to participate in this research project concerning Big Data. I have been given a written description of the project which has been explained to me.

I understand that the data generated will be entered into a filing system or database and will be stored securely at the Open University as described in the Information sheet and will only be used for the purpose of research, statistical and audit purposes in accordance with the provisions of the Data Protection and Freedom of Information Acts. I understand that the information which is being collected as part of the research project will only be accessed by authorised personnel involved in the project.

I understand that the confidentiality of the information that I provide will be safeguarded subject to any legal requirements and no identifiable personal data will be published without additional consent for disclosure.

I understand that my participation is voluntary and that I am free to refuse to answer any question or withdraw the full interview without giving any reason at any time up until the end of July 2015. If I withdraw my data will be removed from the study and will be destroyed.

I consent to this interview being digitally recorded:

☐ Yes ☐ No

Signature _____ Date _____

Participant information

Appendix C

This Appendix provides a brief summary of information on the interview participants and their firms.

ConsultancyCo	
Type of organisation	Marketing consultancy
Role of interviewee	Managing Director
Company information	The consultancy runs large marketing projects for international firms.
Size	An SME of a small group of associates
Geography	UK based serving global clients

EducationCo	
Type of organisation	Professional development education
Role of interviewee	Director of Strategic Marketing
Company information	The company delivers professional development education and training globally. It has an online training academy.
Size	200 staff +
Geography	UK based with overseas offices

FMCGCo	
Type of organisation	Fast moving consumer goods (FMCG) retailer
Role of interviewee	Head of pricing, promotion and supply chain
Company information	A retail chain
Size	3000 staff+
Geography	UK-wide

FinanceCo	
Type of organisation	Bank
Role of interviewee	Executive Director
Company information	Anonymity requested

MembershipCo	
Type of organisation	Not for profit professional body
Role of interviewee	Head of Information Technology
Company information	The organisation provides networking and education opportunities for professionals.
Size	100 staff +
Geography	UK

PublishingCo	
Type of organisation	Commercial publishing business
Role of interviewee	Managing Director
Company information	The company produces and prints national and regional newspapers
Size	3000 staff +
Geography	UK

RetailCo	
Type of organisation	Homewares retailer
Role of interviewee	Head of Information Technology
Company information	The company has retail stores and online retailing.
Size	3000 staff+
Geography	UK

IE Yes, so they... they take an element of it in terms of the statistics, or they just point it to our website, so they're directing their traffic to our site. So not only do we acquire new traffic, but also you're getting the brand profile of BBC or Sky News or something like that. It's endorsing what you're doing.

IV Yes... and then does that help with your SEO then, with Google?

IE Absolutely; yes, very much so. So if you build links with websites of significant domain authority, it's... Domain authority basically is a trust rating, so if you've got a website with a high trust rating, then what Google is saying is: oh, okay, BBC trusts [overtalking]...

IV They rate you [overtalking]...

IE ... this website, we should trust it. So you're always trying your – as in a business, always trying to raise their domain authority. Now, MembershipCo1 has a strong domain authority, but it can always be better, so the more links we have with big sort of mainstream journalists, universities, these kinds of things, with very high domain authorities, the better for us.

So you can see how it's building your brand, appeasing your audience, and we are helping your domain authority, which effectively is free marketing because you don't appear higher in the search rankings when someone searches in Google, or on a similar term. So that's how the data has helped us shape campaigns, shape messaging, improved our brand presence and also helped us with further free marketing.

IV Hmm. And has the organisation just settled into taking that on – that that's what we want to do? Or how... where... where's the driver come from? Has that come from...?

IE Yes, it's been a cultural change ever since the new CEO came in - obviously to think more digitally, and it's my remit obviously to drive that cultural change. And I have, I have good representation at campaign planning meetings where I sort of say, well, we're now going to hear from the expert in this area who is going to tell you really from a digital endpoint...

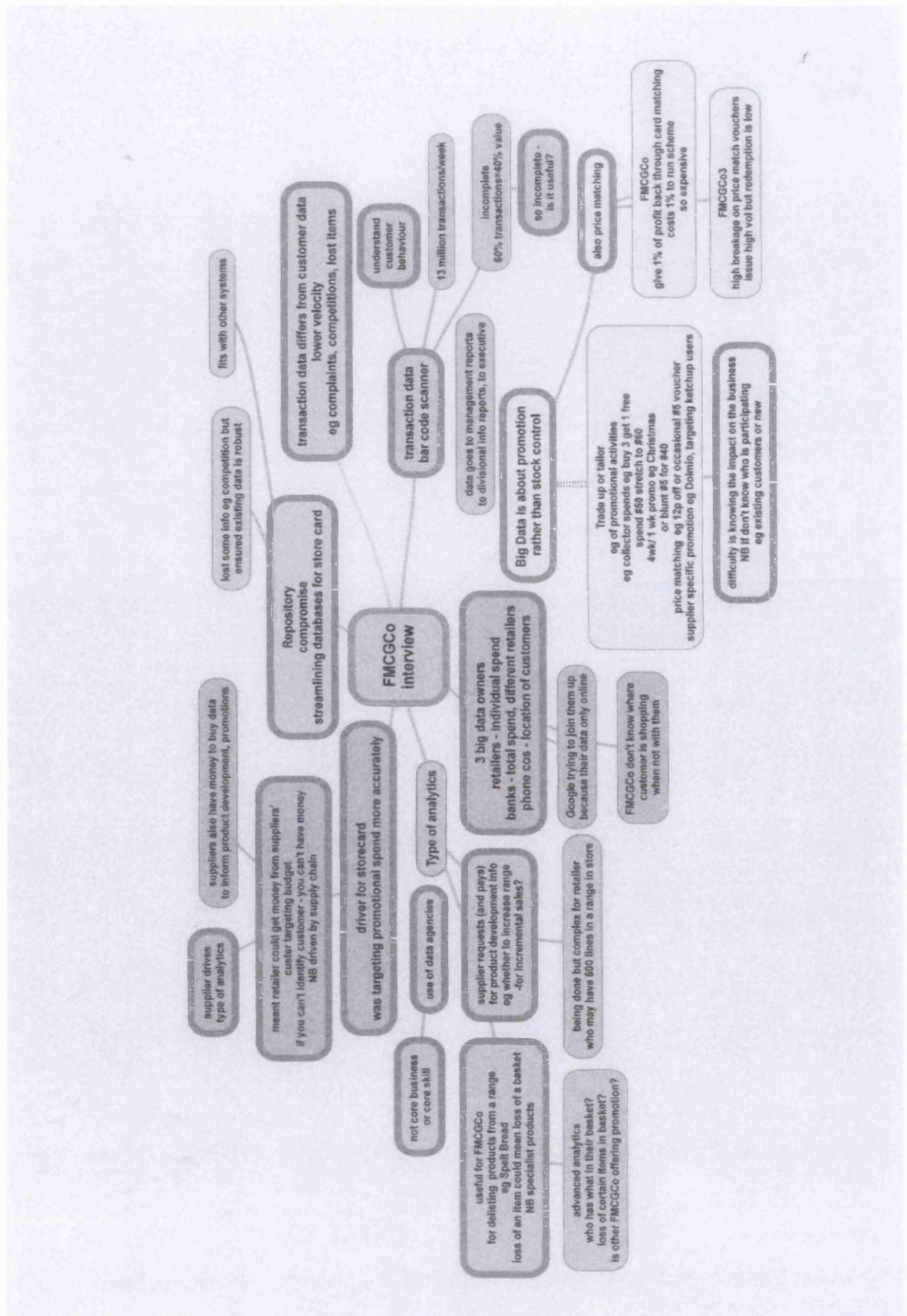
IV Yes – this is what customers are doing, and want to are ... looking at [overtalking]...

IE This is what they want, you know: so produce me a video, produce me an infographic; I'm not bothered about your 25-page research document because people aren't downloading that; they want the bite-sized information. We'll lay out a landing page that is easy to find, easy to work your way through, very little distraction on it, and that's how you're going to get your best conversions.

IV Hmm. And are people taking... you find you're getting enough evidence that it pays off? Are people signing up to that approach?

IE Absolutely. So growth across the board, we've got incremental revenue growth, substitutional revenue growth, visitors going up, downloads going up, so everything's moving in the right direction. But this is only after a period of testing, and testing can be quite slow

Open source or BD sources	
Improving existing data first	
Security	
Definitions	
Operations	
Type or valuable	
Usability & application	
Financial impact	
Analytics over technology	
Marketing & segmentation	
NPD IPD & supply chain	
Promotion & content mgmt	
Coding density	
Inhouse capability & contracting out	



MRes Project Plan
version 1

	October	November	December	January	February	March	April	May	June	July	August	September
MRes units												
Tutorials	15	22	20	4	15							
Assignment	24	34	5	5	33							
MBRM unit												
Tutorials	14	21	4	11	18	27	3	10				
Assignments												
Dissertation												
Viva												
Brainstorm components	x											
Schedule	x											
Discuss timings with												
SD/MM	x	x	x	x	x	x	x	x	x	x	x	x
Review with SD/MM												
Clarify research topic	x	x	x	x	x	x	x	x	x	x	x	x
Read materials on topic	x	x	x	x	x	x	x	x	x	x	x	x
Start to work up research	x	x	x	x	x	x	x	x	x	x	x	x
question												
Clarify Res. Question												
Work up methodology												
(use assignments)												
Clarify methodology	x											
Literature review - topic												
Set up system for	x	x	x	x	x	x	x	x	x	x	x	x
reviewing literature												
CRM	x	x	x	x	x	x	x	x	x	x	x	x
Big data												
Marketing strategy												
Digital marketing												
approaches												
Methodology												
Creative qualitative												
research												
Notes on methodology												
from Mres literature												
Write up methodology												
section												
Collate notes on ethics												
Draft ethics proposal												
Submit ethics proposal to												
committees (multiple?)												
Ethics committee												
Task list												
Draft initial interest paper												
for partners/ potential												
participants												

Appendix F ctd.

MRes Project Plan version 3																																	
	October	November	December	January	February	March	April	May	June	July	August	September																					
Prepare materials to access participants																																	
Contact with partners																																	
Pilot study meetings																																	
Transcribe interviews																																	
Analysis																																	
Analyse interviews																																	
Write up analysis																																	
Write up research Q																																	
Methodology																																	
Literature Review																																	
Secondary research - findings																																	
Primary research - findings																																	
Research analysis																																	
Conclusions																																	
Referencing																																	
Appendices																																	
Training & development																																	
portfolio																																	
Abstract																																	
Proof reading and revising																																	
Second draft																																	
Proof reading and revising																																	
Full draft review																																	
Proof reading and revising																																	
Final dissertation for submission																																	
Revise research proposal for PHD submission																																	
Submission																																	
Submit dissertation																																	
Prepare for viva																																	
Practice for viva																																	
Poster session																																	

In addition to the Open University's taught MRes programme the researcher developed academic skills by taking part in relevant training programmes. These included:

- Open University Postgraduate research student induction 'Developing as a Researcher' parts 1 and 2
- Doctoral workshops:
 - What is a research degree and getting going on one;
 - Project Planning;
 - Planning and writing the literature review;
 - Research ethics;
 - Research design and focus;
 - Being 'critical' in academic writing;
- Open University PhD colloquium
- Open University Poster competition: Poster training and submission for OUBS poster competition

NVivo software training; using software for Qualitative Research: A step by step guide (4 sessions)